

ENGINEERING REPORT

for

CONTRACT NUMBER DACW-33-83-D-0006
WORK ORDER NUMBER 0008

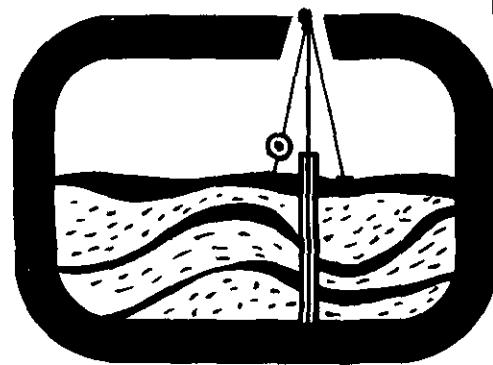
SUBSURFACE INVESTIGATION

SMITH COVE
GLOUCESTER, MASSACHUSETTS

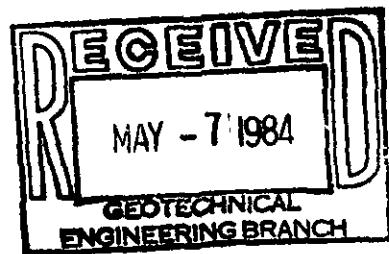
May 4, 1984

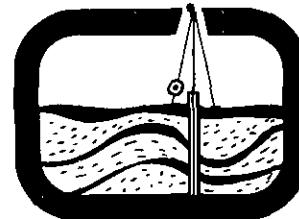
Prepared for:

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254



EGA





EGA
EASTERN GEOTECHNICAL ASSOCIATES • BRIGGS

164 Washington Street, Norwell, MA 02061 ► Telephone (617) 773-1744

May 4, 1984

U.S. ARMY CORPS OF ENGINEERS
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254

ATTENTION: Jim Blair - 117 South

RE: Contract DACW-33-83-C-0006
Work Order No. 0008

Dear Mr. Blair:

In accordance with Work Order No. 0008, dated 4 April 1984. We are pleased to submit two final copies of our Engineering Report for the subsurface investigation performed at Smith Cove, Gloucester, Massachusetts for the proposed anchorage.

If you have any questions or comments, please do not hesitate to call.

Very truly yours,



David S. Campbell, P.E.
President

DSC/rb
Attachments

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1.0 GENERAL

1.1 Authorization

The work reported herein was performed under Contract DACW 33-81-D-0006, Work Order Number 0008, dated 6 April 1984. The authority for this project was derived from Section 107, Small Boat Navigation Project.

1.2 Project Site

The site is located in Smith Cove, east of Gloucester Inner Harbor, Gloucester, Massachusetts. The project site is shown on the Site Location Plan, Figure 1.

1.3 Purpose

The purpose of this work was to determine the subsurface conditions for the proposed anchorage in Smith Cove.

1.4 Scope of the Investigation

Inspection and exploration instructions, which were provided by the Army Corps of Engineers, New England Division, are included in Appendix A. The subsurface investigation program employed drive sample borings and machine probes.

Work under this delivery order consisted of locating three drive sample borings and nine machine probes by means of sextant using two angles for each location as indicated on Figure 2. Actual locations of the borings were to be determined following the completion of the sixth probe by the Corps of Engineers, NED. Elevations were to be estimated from daily tide curves. The test boring and probe locations are shown on the Boring Location Plan, Figure 2.

The drive sample borings were performed in accordance with paragraph "7" page C-11 of the specifications using a solid-barrel sampler with sampling intervals of 5 ft. The borings were taken to the specified depth of -15 ft MLW or refusal. Where refusal was encountered, three feet of rock core was taken. The field logs for the test borings are included as Appendix D. The machine probes were performed in accordance with paragraph "8c. (3)" page C-14 of the specifications using "AW" size drill rods. The probes were driven to the specified depth of -15 ft MLW or refusal. The field logs for the probes are included as Appendix E.

2.0 QUALITY CONTROL

2.1 Equipment

The following equipment and tools were used to perform the work:

- a. Drilling Platform: A 16 by 12 ft wooden raft was used as the drilling platform. The raft was moved by a 16 ft Boston Whaler, powered by a one hundred horsepower Johnson outboard motor.
- b. Core Drill: The core drill used was a modern hydraulically driven rotary head unit manufactured by Acker Drill Company.
- c. Drive Hammer: The drive hammer used to advance the solid-barrel sampler and drill rods for probes weighed approximately 300 pounds.
- d. Casing and Rods: NW (3-0 in. I.D.) flush joint casing was used to keep the borehole open. AW-size drill rods were used in washing out the borehole and driving the solid-barrel sampler and AW drill rods for probes.
- e. Samplers: The equipment employed to obtain soil samples was a solid-barrel sampler 5.0 ft in length with an inside diameter of 1-7/8 in. Rock cores were obtained by a swivel head, double tube, 1-3/8 in. I.D. core barrel using an impregnated diamond bit.

2.2 Records

NED Forms 121, 58 and 58A were used to record pertinent drilling and sampling operations. The probe logs include the following information:

- (1) Name of project.
- (2) Site location designation.
- (3) Ground elevation at location of exploration.
- (4) Date exploration performed.
- (5) Method of penetration.
- (6) Depth of penetration.

- (7) Density of material encountered, determined by sound and performance of probing operation.
- (8) Name of driller and Field Inspector.
- (9) Blows/ft of penetration.

The test boring logs contained the following information:

- (1) Hole number, hole designation and elevation of top of hole.
- (2) Make and manufacturer's model designation of equipment.
- (3) Type of drilling and sampling operation by depth.
- (4) Dates and time by depth when drilling and sampling operations were performed.
- (5) Depths at which samples or cores were recovered or attempts made to sample including top and bottom depths of each sampling interval. Classification or description including geologic and common usage designation such as till, fluvial deposits, etc. by depths of materials sampled or penetrated including a description of moisture conditions, color and conditions of compactness or stiffness of soils materials encountered. Record of penetration resistance such as drive hammer blows given in blows per foot of penetration depth for driving sample spoons.
- (6) Depths at which drill water is lost and regained.
- (7) Depth to bottom of hole.
- (8) Percentage of sample of core recovered per run.

2.3 Procedures

- a. Boreholes were advanced by sampling in which a 1-7/8 inch I.D. by 5.0 foot solid-barrel sampler was advanced from the ground surface or below the bottom of the casing into undisturbed soil by the impact of a hammer weighing approximately 300 pounds, falling 18 inches. Refusal was defined as 100 blows with no penetration or bouncing refusal.

- b. The sample spoon shoes were kept reasonably sharp at all times. Dull, bent, or otherwise damaged samplers were not used. Following sampling, the casing was advanced and cleaned out using an appropriately sized side discharging chopping bit or roller rock bit.
- c. Samples were classified in the field immediately following the taking of the sample. Classification was in accordance with ASTM D-2487 and D-2488. Representative samples were taken from each soil sampling run and placed in 16 oz. glass jars with hermetically sealed lids. Jars were labeled with sample number, sampling interval, boring number, date, location, and soil description. A chain of custody log was maintained documenting custody of the samples between the field and transportation and delivery to the laboratory at NED.
- d. The machine probes were made by advancing an open-end AW drill rod from the mudline to the specified depth or refusal by the impact of a 300 pound hammer falling freely through an 18 inch drop, recording the blows per foot of penetration. Refusal is defined as 100 blows with no penetration or bouncing refusal.
- e. The location of each test boring and probe was established using a sextant with two angles from known physical features along the shoreline.

3.0 QUALITY CONTROL CERTIFICATION

I hereby certify that the above-mentioned records, equipment, and procedures were used to perform the subsurface exploration described herein. I also certify that the work was performed in a professional manner and meets the requirements set forth in the work order.

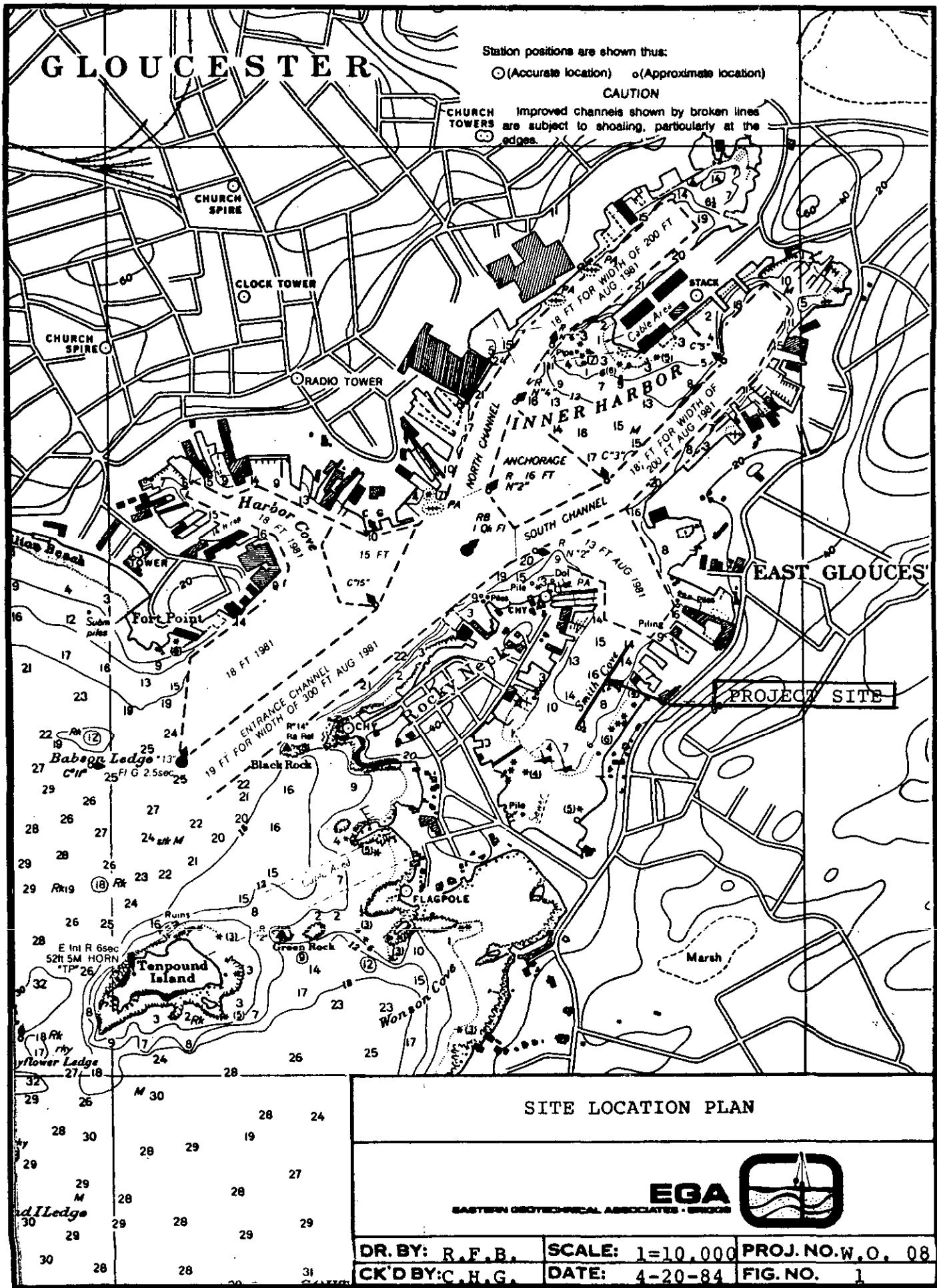
CERTIFIED 4 May 1984



David S. Campbell

TABLE 1
SUMMARY OF ACTIVITIES

DATE	ACTIVITY
9 April	Monday: Mobilized drilling equipment to Smith Cove, Gloucester, Massachusetts. Unloaded and assembled raft and launched using a crane.
10 April	Tuesday: Launched Boston Whaler and commenced drilling at probe locations. Chronological order for completion of the probes was waived by Corps of Engineers prior to the start of work because of shallow water depths at some locations and unfavorable daytime tides at the start of field work. Probes FP-84-1 (P-1) and FP-84-2 (P-8) were started and completed. Low tide precluded site moves to other probe locations.
11 April	Wednesday: Started and completed Probes FP-84-3 (P-10), FP-84-4 (P-4), FP-84-5 (P-3), and FP-84-6 (P-9). Low tide prevented any additional probes to be completed. Coordinated with Mr. Jim Blair, NED - GEB, the location of borings based on the results of the six probes which had been completed.
12 April	Thursday: Started and completed boring FD-84-1 at location P-3 and probes FP-84-7 (P-2) and FP-84-8 (P-7). Ebb tide caused the raft to become grounded at probe location FP-84-8 (P-7). The raft could not be moved until high tide.
13 April	Friday: Started and completed borings FD-84-2 at location P-2, and FD-84-3 at location P-3. Field work completed and equipment demobilized.

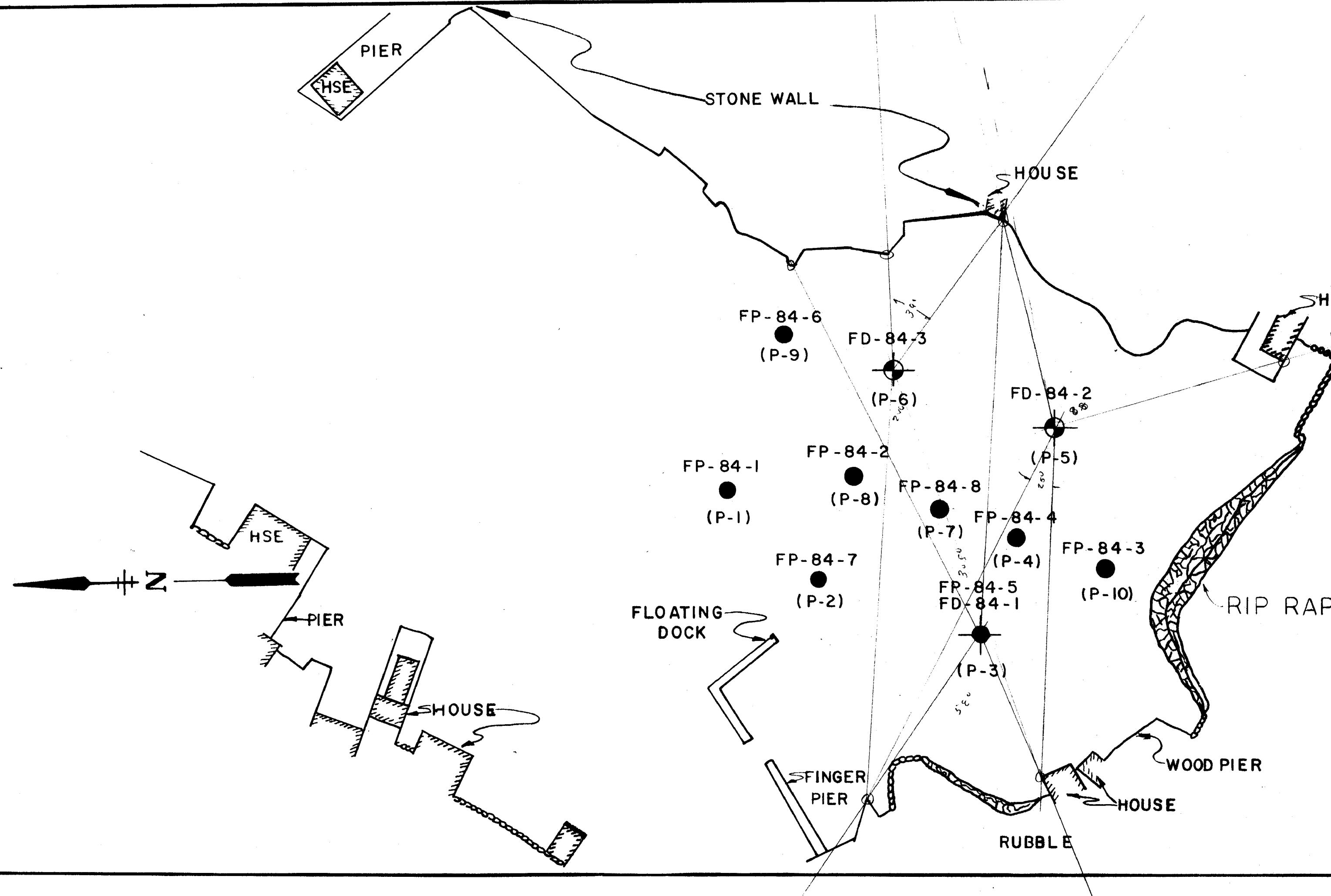


LEGEND

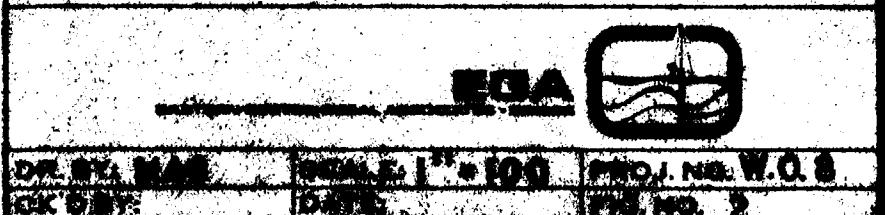
FP-84-1
(P-1)
PROBE LOCATION

FD-84-2
(P-5)
BORING LOCATION

FP-84-5
FD-84-1
(P-3)
PROBE & BORING LOCATION



PROBE & BORING LOCATION PLAN



APPENDIX A
INSPECTION AND EXPLORATION INSTRUCTIONS

ATTACHMENT NO. 1

GEB REQUISITION NO. 84-34 - DACW 33-83-D-0006

DELIVERY ORDER NO. 0008

INSPECTION AND EXPLORATION INSTRUCTIONS

PROJECT: Section 107, Small Boat Navigation Project

SITE: Smith Cove, Gloucester, MA

PURPOSE: The subsurface investigations are to determine the foundation conditions for the proposed anchorage in Smith Cove, Gloucester, MA.

1. SCOPE OF INVESTIGATION

a. Locate three continuous 300# cased drive sample borings and ten 300# machine probes by means of sextant with at least two angles for the ten locations as indicated on Attachment 2. Actual location and order of borings will be determined by Mr. Blair after completion of the sixth probe. Elevations will be estimated based on daily tide curves. Mean low water (MLW) will be the datum used on all boring logs and throughout the engineering report.

b. Ten machine probes shall be driven to an elevation of up to -15 MLW or refusal in accordance with paragraph 8c. (3) page C-14 of the specifications and shall be performed using "A" size rods.

c. The three continuous drive sample borings shall be driven to elevation -15 MLW. The sampling work shall be in accordance with paragraph 7, page C-11 of the specifications. Water content jar samples shall be taken in all fine grain soil which exhibits any plasticity. Where refusal is encountered, 3 feet of rock core will be drilled terminating the work at this location.

d. A geotechnical inspector shall act as field inspector while performing the borings and probes. The inspector shall provide telephone reports to Mr. Blair, Corps of Engineers, at 617-647-8396 at least every two working days and upon completion of first six probes.

e. All samples shall be delivered to the Corps of Engineers Headquarters in Waltham, Massachusetts by the field inspector. Sample delivery shall be coordinated with the Director, NED Materials and Water Quality Laboratory at 617-8367/8392.

2. SITE CONDITIONS

The proposed exploration program is in Smith Cove, Gloucester, MA. All of proposed explorations are within the tidal range. It is anticipated that water depths at the exploration site range from 0 to 20 ft.

3. RIGHTS OF ENTRY

The Contractor is responsible for securing any rights of entry, approvals, permits, etc. necessary for the performance of the work.

4. COORDINATION

Mr. James Blair, Corps of Engineers, 617-647-8396, shall be contacted five days prior to start of work and at least every two working days, completion of sixth probe or at the completion of each boring whichever is more frequent by the geotechnical inspector to report on how work is progressing and what types of materials are being encountered.

5. EXPLORATION NUMBERS

The machine probes designated 1 through 10 and located on Attachment 2 shall be probed in chronological order and numbered FP-84-1 through FP-84-10 in order of their completion. The actual location and order of borings will be determined by Mr. Blair after completion of the sixth probe. The drive sample borings will be numbered FD-84-1 through FD-84-3 in order of their completion. The new numbers shall be indicated on the exploration logs and shown on a plan of explorations.

6. GOVERNMENT REVIEW

The Government will review the draft submittal as well as the completed work. Subsequent to such review, the Contractor shall accomplish any corrections which may be directed as the result of the Government review.

7. COMPLETION SCHEDULE

Services under this delivery order shall start within 15 calendar days after receipt of delivery order. Duration of field work is estimated to be five work days. The geotechnical report shall be submitted in draft format for review by the Government, post-marked no later than seven calendar days after completion of the field work. Government review will take approximately ten calendar days from receipt of draft report. The final geotechnical report shall be submitted post-marked no later than seven calendar days after receipt of draft report including the action taken on possible Government comments.

8. QUALITY CONTROL

The Contractor shall maintain an effective quality control program which will assure that field services and supplies conform to contract requirements. Field supervisory personnel shall be responsible for the quality control. The quality control program shall contain as a minimum, the following items:

- a. Adequately staffed, equipped and qualified field team.
- b. Well maintained and calibrated field sampling/testing equipment.
- c. Proper documentation of methods and procedures.
- d. Evaluation of specific sampling site selection for representativeness and conformance with delivery order objective.
- e. Periodic observation and evaluation of field sampling and testing.
- f. Collection of randomly selected replicate samples and analyses of mock samples.
- g. Constant checks on proper management to include sample custody.
- h. Training and retraining of staff on methods, procedures and equipment.

APPENDIX B
SAFETY REPORTS

EASTERN GEOTECHNICAL ASSOCIATES

WEEKLY SAFETY MEETING

TO: Safety Office, NED

FROM: Field Engineer

Date held 4-9-84

THRU: Project Engineer

Time 0700

Weekly safety meeting was held this date for the following personnel:
Contract No. DACW 33-83-D-0006 Personnel present: C. Reil
Work Order No. 008 C. Coolen
Conducted By: John Crowther

1. Subjects discussed (Note, delete, or add):

- Individual Protective Equipment -
- Prevention of Falls -
- Safe Lifting Techniques -
- Emergency Communications -
- Fire Prevention -
- Sanitation, First Aid -
- Tripping Hazards - trash, hose, nails in lumber -
- Staging, Ladders, Concrete Forms -
- Hand Tools -
- Portable Power Tools -
- Woodworking Machinery -
- Equipment Maintenance (Zero defects) -
- Hoisting Equipment -
- Ropes, Hooks, Chains and Slings -
- Electrical Grounding, Temporary Wiring -
- Lockouts for safe clearance procedures -
- Electrical, pressure, moving parts -
- Welding -
- Excavations -
- Loose Rock and Steep Slopes -
- Explosives -
- Water Safety -
- Other -

Prepared by: John Crowther
Field Engineer

2. Exposure:

No previous exposure, start of new work order.

Signature:

Ronald F. Bubash
Project Engineer

3. Forwarded: NED, Waltham, MA

EASTERN GEOTECHNICAL ASSOCIATES

WEEKLY SAFETY MEETING

TO: Safety Office, NED

FROM: Field Engineer

Date held 4-16-84

THRU: Project Engineer

Time 0700

Weekly safety meeting was held this date for the following personnel:
Contract No. DACW 33-83-D-0006 Personnel present: _____
Work Order No. 008 _____
Conducted By: John Crowther _____

1. Subjects discussed (Note, delete, or add):

Individual Protective Equipment -
Prevention of Falls -
Safe Lifting Techniques -
Emergency Communications -
Fire Prevention -
Sanitation, First Aid -
Tripping Hazards - trash, hose, nails in lumber -
Staging, Ladders, Concrete Forms -
Hand Tools -
Portable Power Tools -
Woodworking Machinery -
Equipment Maintenance (Zero defects) -
Hoisting Equipment -
Ropes, Hooks, Chains and Slings -
Electrical Grounding, Temporary Wiring -
Lockouts for safe clearance procedures -
Electrical, pressure, moving parts -
Welding -
Excavations -
Loose Rock and Steep Slopes -
Explosives -
Water Safety -
Other -

Prepared by: John Crowther
Field Engineer

2. Exposure:

For five men, for April 9 thru April 13, 1984, with a total exposure of 122 man-hours. Field work for Work Order 0008 was completed on April 13, 1984.

Signature:

Ronald F. Rohat
Project Engineer

3. Forwarded: NED, Waltham, MA

APPENDIX C
CHAIN OF CUSTODY LOG

EASTERN GEOTECHNICAL ASSOCIATES

Chain of Custody Log

Project: Subsurface Investigation: Determine foundation conditions
for the proposed anchorage in Smith Cove, Gloucester, Massachusetts.

<u>Items:</u>	Tubes	None
	Bottles	None
	Jar Samples	20
	Core Boxes	1
	Sampling Logs	FD-84-1 thru FD-84-3

<u>Date & Time Received</u>	<u>Date & Time Transferred</u>	<u>Comments</u>	<u>Custodian</u>
as sampled	4-20-84 0740hrs		John Coulter
4/20/84 - 0745			J. Krause

APPENDIX D
FIELD LOGS OF TEST BORINGS

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE GLoucester MA PROJECT NO. W.O. #0008
 Hole No. ED-84-1 Diam. (Casing) 2 3/8" I.D. Page 1 of 3 Pages
 Co-ordinates: N _____ E _____
 Drilled by EASTERN GEOTECHNICAL ASSOC. Boring Started 4-12-84
 Report Submitted _____
 Purpose of Exploration DREDGE SITE

Elevation Top of Hole -1.9 MLW Casing Left in Place 0.0 feet
 Total Overburden Drilled 15.5 feet
 Elevation Top of Rock Above Encountered M.G.T.
 Elevation Bottom of Hole -17.4 M.G.T.
 Total Rock Drilled 0.0 feet
 Total Depth of Hole 15.5 feet
 Core Recovered -%
 Core Recovered — ft.; Diam. in.
 Soil Samples 17 1/8" in. Diam. 3 No.
 Soil Samples — in. Diam. — No. Water Table Depth _____

Depth From To	Method of Drilling and Type of Bit Used
0 15.5	SAMPLED CONTINUOUS WITH 5 FT. 17 1/8" ID. SPOON
	CASED TO 10.0, 3" CASING

INDEX	
Ground Water	Page <u>2</u>
Boring Location Sketch	Page <u>2</u>
Overburden Record	Page <u>3</u>
Rock Drilling	Page <u>N/A</u>
	Page <u>—</u>
	Page <u>—</u>
	Page <u>—</u>

Prepared by JOHN CROWTHER

Field Data

Lab. Data

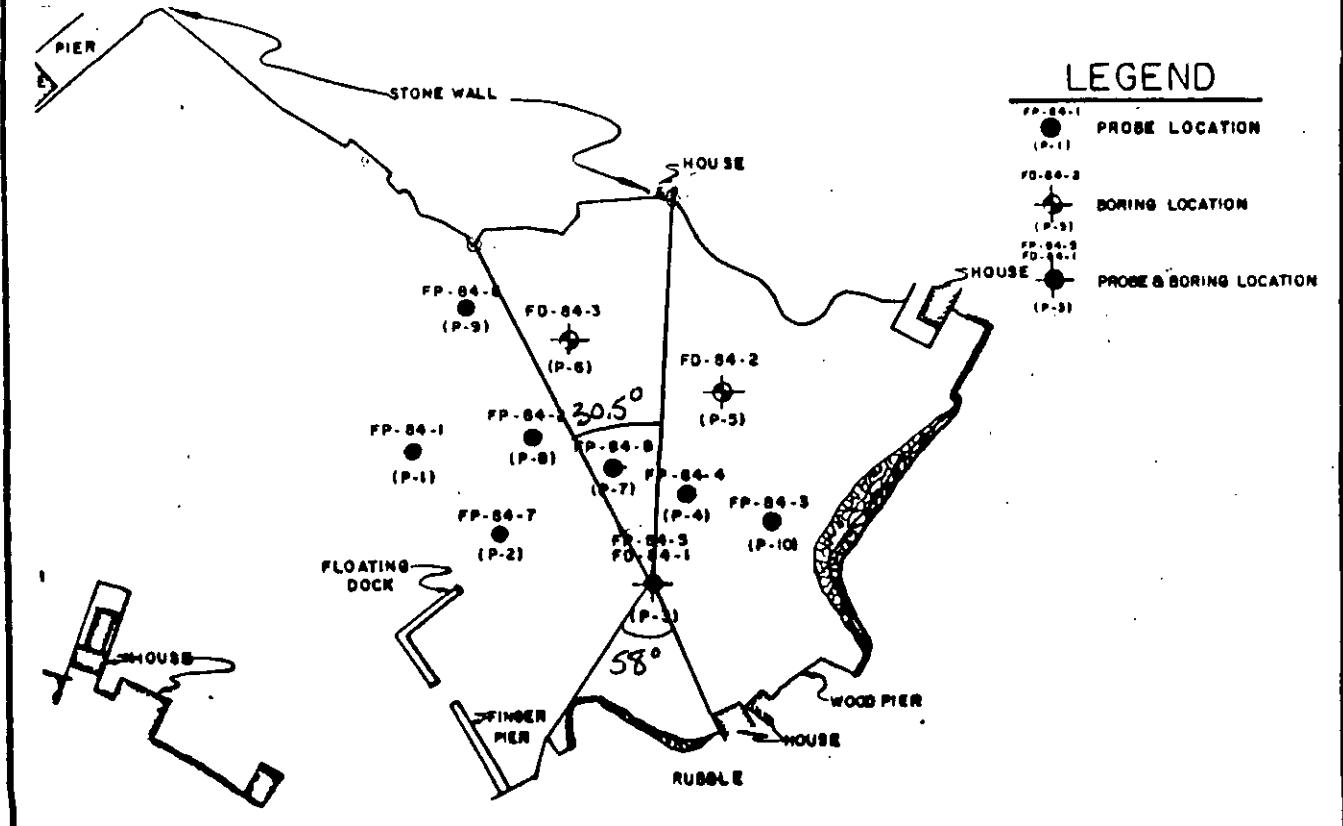
Submitted by _____

Site: SMITH COVE Gloucester MA
Boring No FD-54-1

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

Site SMITH COVE CLAVERSTON MA Page 3 of 5 Pages

Boring No. FD-84 Design. P-3 Diam. (Casing) 2 1/8" ID.

FIELD LOG OF TEST BORING

Co-ordinates: N _____ E _____

Elevation Top of Boring -1.9 MLW M.S.L.
Total Overburden Drilled 15.5 Feet
Elevation Top of Rock None ENCOUNTERED M.S.L.
Total Rock Drilled 0.0 Feet
Elevation Bottom of Boring -17.4 MLW M.S.L.
Total Depth of Boring 15.5 Feet
Core Recovered - % No. Boxes -
Core Recovered - Ft : - Diam. - in.
Soil Samples 17/8 in. Diam. 3 No.
Soil Samples in. Diam. No.

Hammer Wt. 300lb Boring Started 4-12-84
Hammer Drop 18" Boring Completed 4-12-84
Casing Left 0
Subsurface Water Data - Page -
Obs. Well -
Drilled By EASTERN GEOTECHNICAL
Mfg. Des. Drill ACTER
Inspected By J. CROWTHER
Classification By J. CROWTHER
Classification By

DEPTH	CORE/SAMPLE	BLOWS PER FT ^{1/2}	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
CASING BLOW	NO.	SIZE DEPTH RANGE	CORE REC'D	
300lb HAMMER PER FT		0.0	Z.O FT. PUSH IN	
0	1	10		
		50'		
1				
20				
II	3		SAMPLED WITH 5 FT 17/8" ID SPOON FROM 0.0 TO 5.0 FT WITH 300lb HAMMER.	
50	5			
IA	7			
27	11		DROVE 3" ID CASING FROM 0.0 TO 5.0 FT, AND WASHED OUT	
42	15			
50	17		Z.O FT. REC.	

GENERAL REMARKS: WATER 9.5 FT. DEEP AT 0930hrs

ON 4-12-84

SILT - nonplastic; less than 6% sand and shells, dark brown (ML).

Grades to

CLAYET-SILT slightly plastic dark grey-brown (ML).

CLAY, slightly plastic, stiff, 5-10% silt, brown-grey (CL).

Site: SMITH COVE GLOUCESTER MA					Boring No. FD-84-1 on P-3	Page <u>4</u> of <u>5</u>
DEPTH ft. 1.0'	CORE/SAMPLE		BLOWS PER FT. CORE REC'D	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS	
	NO.	SIZE INCHES RANGE			DEPTH ft.	
42	2		3 50 to 6	SAMPLED WITH 5 FT., 1 7/8" ID SPOON FROM 5.0 TO 10.0 FT WITH 300 lb HAMMER.	CLAY slightly plastic, v.stiff, 5-10% silt, trace gravel, brown-grey (CL)	
57			6			
68			7			
83			9			
90			12			
100			13			
110			17			
120			17			
130			17			
140			10.0 to 15.5			
150			4	SAMPLED WITH 5 FT., 1 7/8" ID SPOON FROM 10.0 TO 15.5 FT. WITH 300 lb. HAMMER	CLAY, slightly plastic, v.stiff, 5-10% silt, trace gravel, grey (CL)	
160			6			
170			6			
180			10			
190			16			
200			24			
210			30			
					12.5	25

Site: SMITH COUG GLOUCESTER MA					Boring No. FD - 84-1 ON P-3	Page 5 of 5
DEPTH	CORE/SAMPLE		BLOWS PER FT.	SAMPLING AND CORING OPERATIONS		CLASSIFICATION OF MATERIALS
'	NO.	SIZE	DEPTH RANGE	CORE REC'D		
4.0			34		NOTE: BROKE TRAP IN CLAY	SANDY GRAVELLY CLAY moderately plastic, hard, 20-30% gravel and sand, brown - brown - grey (CL).
12			12			
15.0			46			
15.5			130	2.0 ft. REC.		15.5
					END OF BORING AT 15.5FT.	

CORPS OF ENGINEERS, U. S. ARMY
 NEW ENGLAND DIVISION
 FOUNDATION AND MATERIALS BRANCH
 FIELD LOG OF TEST BORING

PROJECT NO. W.O. #0008

Page 1 of 5 Pages

Site SMITH COVE GLOUCESTER MA

Hole No. FD-84-2 Diam. (Casing) 2 3/8 I.D.

Boring Started 4-13-84

Co-ordinates: N _____ E _____

Boring Completed 4-17-84

Drilled by EASTERN GEOTECHNICAL ASSOC.

Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole -0.8 MLW M.S.L.

Casing Left in Place 0.0 Feet

Total Overburden Drilled 15.0 Feet

Elevation Top of Rock -15.0 MLW M.S.L.

Elevation Bottom of Hole -15.8 M.S.L.

Total Rock Drilled 0.0 Feet

Total Depth of Hole -15.0 Feet

Core Recovered _____ %

Core Recovered Ft. Diam. In.

Soil Samples 17/8 In. Diam. 3 No.

Soil Samples In. Diam. No.

Water Table Depth _____

Depth		Method of Drilling and Type of Bit Used
From	To	
0	15	SAMPLED CONTINUOUS WITH 5FT. 1 3/8" ID SPOON
		CASED TO 10.0, 3" CASING

INDEX:

- Ground Water TIDEA Page 2
- Boring Location Sketch _____ Page 2
- Overburden Record _____ Page 3
- Rock Drilling _____ Page N/A
- _____ Page _____
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- _____ Page _____

Prepared by JOHN CROWTHER

Field Data

Lab Data

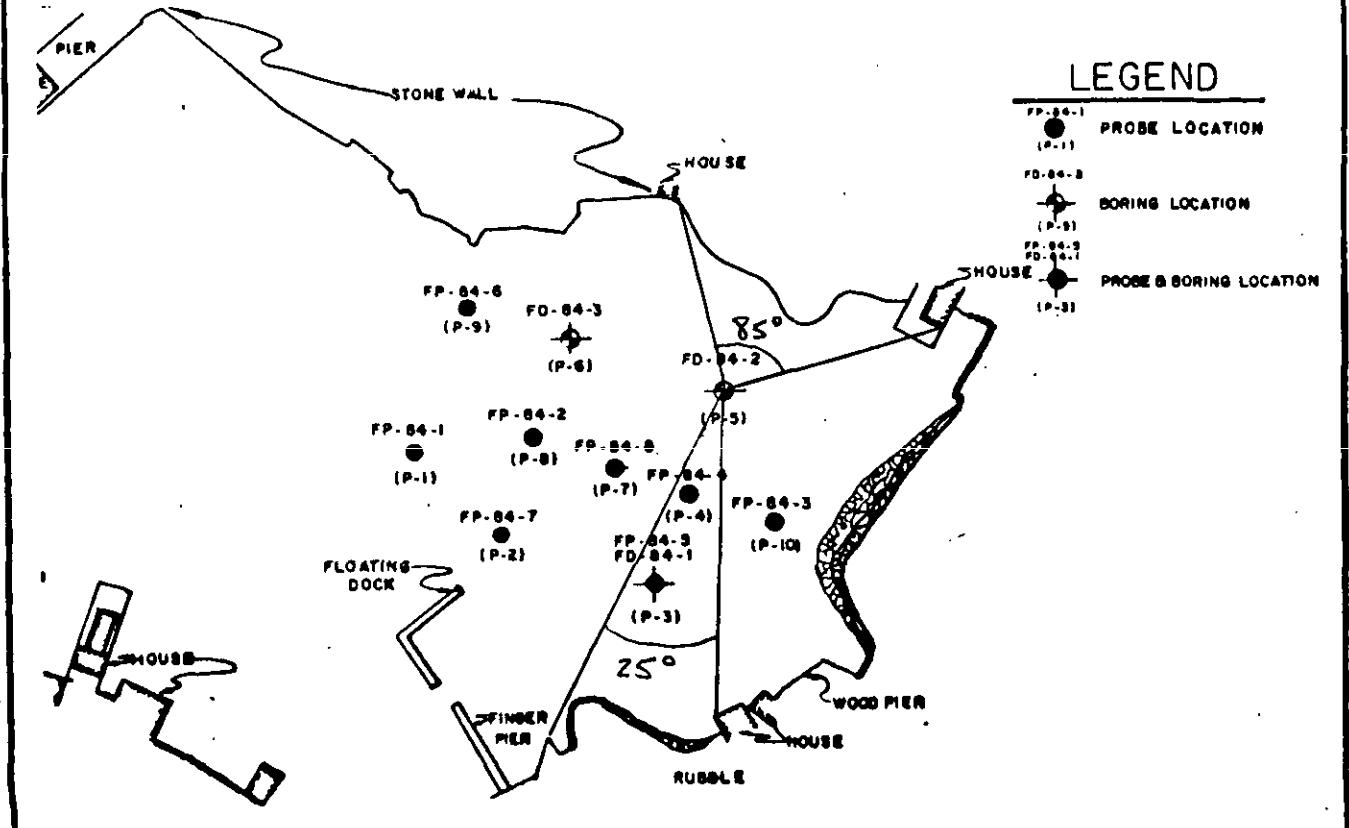
Submitted by _____

Site: SMITH COVE GLOUCESTER MA
Boring No FD-84-2

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Boring No. FD-84-2

**U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION**

Site SMITH COUG Gloucester MA Page 3 of 5 Pages

Boring No. FD-842 Design. P-5 Diam. (Casing) 23 1/8"

FIELD LOG OF TEST BORING

Co-ordinates: N _____ E _____

Elevation Top of Boring - 0.8 MLW M.S.L.
 Total Overburden Drilled 15.0 Feet
 Elevation Top of Rock 15.0 M.S.L.
 Total Rock Drilled 0.0 Feet
 Elevation Bottom of Boring - 15.8 MLW M.S.L.
 Total Depth of Boring 15.0 Feet
 Core Recovered % No. Boxes _____
 Core Recovered Ft Diam. In.
 Soil Samples 178" In. Diam. 3 No.
 Soil Samples In. Diam. No.
 Hammer Wt. 300lb. Boring Started 4-13-84
 Hammer Drop 18" Boring Completed 4-13-84
 Casing Left 0
 Subsurface Water Data Page _____
 Obs. Well _____
 Drilled By EASTERN GEOTECHNICAL ASS.
 Mfg. Des. Drill ACKER
 Inspected By J. CROWTHER
 Classification By J. CROWTHER
 Classification By _____

Site: SMITH COVE
GLOUCESTER MA

Boring No.

FD-84-2

P-5

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of 5

DEPTH (ft.)	CORE/SAMPLE NO.	CORE SIZE INCHES RANGE	BLOWS PER FT. 1/2 CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
15	2	5.0 to 100	4 5 6	SAMPLED WITH 5 FT. 1 1/8" I.D. SPOON FROM 5.0 TO 100 FT. WITH 300 LB HAMMER	CLAY moderately to slightly plastic, V. stiff light brown (CL)
33			6		
25			7	DROVE 3" ID CASING FROM 5.0 TO 100 FT AND WASHED OUT	
25			11		
			15		
23			15		
100	17	4.5 FT. REC.		10.0 FT.	10.0
10.0	3	10.0 to 150	3 3 3 3 3 4 5	SAMPLED WITH 5 FT. 1 1/8" I.D. SPOON FROM 10.0 TO 150 FT. WITH 300 LB HAMMER	SILTY CLAY, slightly plastic, less than 5% gravel, 5-10% very fine sand, brown (CL).
12.0					
13.0	3A				
					12.5
					12.5

Site: SMITH COVE GLOUCESTER MA					Boring No. FD-84-2	Page <u>5</u> of <u>5</u>
DEPTH <i>f = 1.0'</i>	CORE/SAMPLE NO.	SIZE DEPTH RANGE RANGE RECVY	BLOWS PER FT. <i>1/2</i>	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS	
14.0	3B		17		14.0'	14.0
			45		SILTY SAND coarse to fine 5-10% gravel, 5-15% s.s.p. fines, brown (SM)	
15.0			70	4.0 ft REC.	Possible Glacial Till	15.0
				END OF BORING AT 15.0 FT		
				NOTE: BOUNCE AT 15.0 FT. PROBABLE LEDGE GRANITE IN TIP OF SPOON		

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE GLoucester MA

PROJECT NO. W.O. #0008

Page 1 of 4 Pages

Hole No. FD-84-3 Diam. (Casing) 3" I.D.

Boring Started 4-13-84

Co-ordinates: N _____ E _____

Boring Completed 4-13-84

Drilled by EASTERN GEOTECHNICAL A&E C.

Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole -2.3 MLW M.S.L.

Casing Left in Place 0.0 feet

Total Overburden Drilled 8.0 feet

Elevation Top of Rock -10.3 MLW M.S.L.

Elevation Bottom of Hole -13.3 MLW M.S.L.

Total Rock Drilled 3.0 feet

Total Depth of Hole 11.0 feet

Core Recovered 97.2 %

Core Recovered 2 ft; 11" diam. 3/8 in.

Soil Samples 17/8 in. diam. 4 no.

Soil Samples in. diam. no.

Water Table Depth _____

Depth From To	Method of Drilling and Type of Bit Used
0 8	SAMPLED CONTINUOUS WITH 5 ft, 1 7/8" I.D. SPOON
	CASED TO 8.0, 3" CASING
8 11	CORED REDROCK WITH 1 3/8" DIAMOND BX CORE BARREL

INDEX

Ground Water	TIDAL	Page 2
Boring Location Sketch		Page 2
Overburden Record		Page 3
Rock Drilling		Page 4
		Page 5
		Page 6
		Page 7

Prepared by JOHN CROWTHER

Field Data

Lab. Data

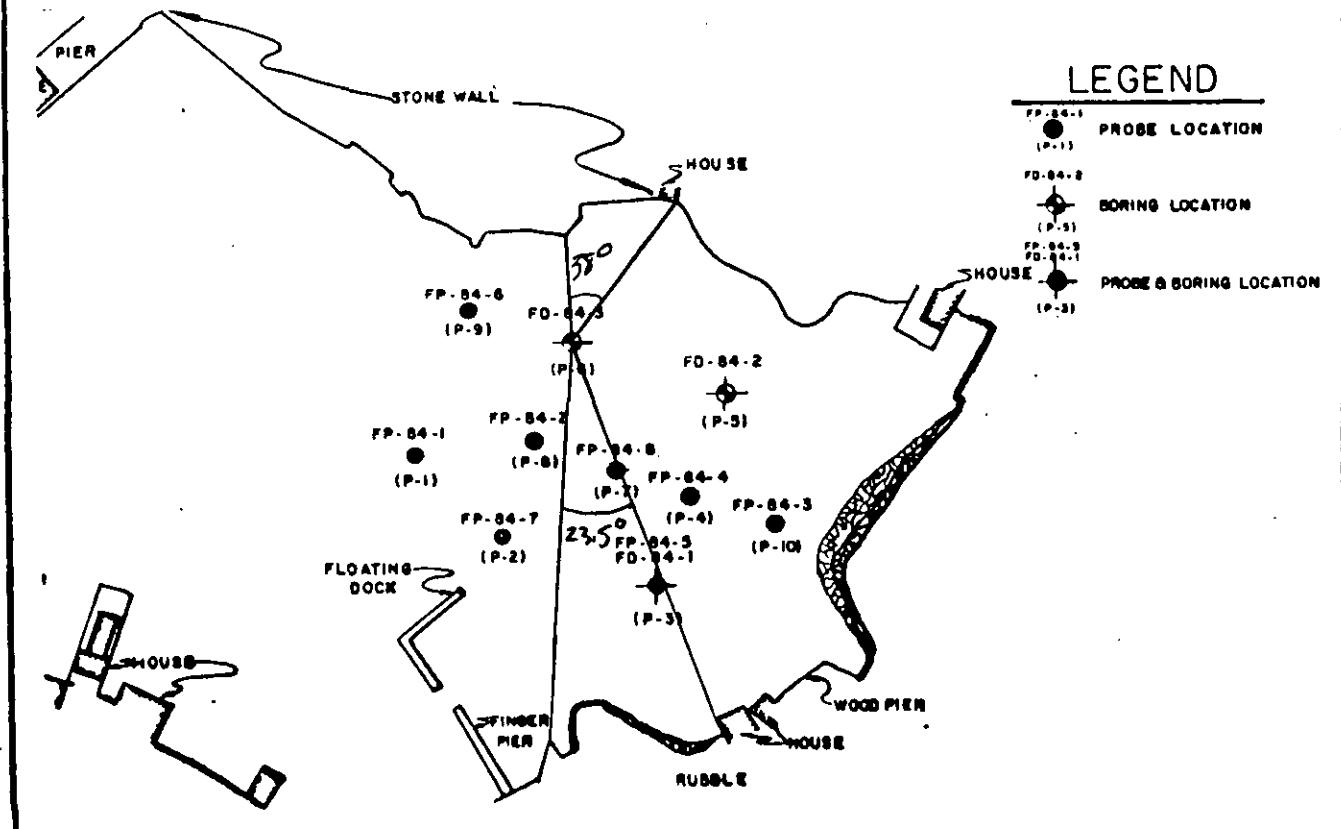
Submitted by _____

Site: SMITH COVE GLOUCESTER MA
Boring No FD-84-3

TIDAL OBSERVATIONS

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Boring No. FD-54-3

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

Site SMITH COVE GLOUCESTER MA Page 3 of 4 Pages

Boring No. ED-84-3 Desig. P-6 Diam. (Casing) 3" ID

FIELD LOG OF TEST BORING

Co-ordinates: N _____ E _____

Elevation Top of Boring	<u>-7.2.3</u>	MLW	Hammer Wt. <u>300lb</u>	Boring Started <u>4-13-84</u>
Total Overburden Drilled	<u>8.0</u>	M.G.L.	Hammer Drop <u>15"</u>	
Elevation Top of Rock	<u>-10.3</u>	MLW	Casing Left <u>0</u>	Boring Completed <u>4-13-84</u>
Total Rock Drilled	<u>3.0</u>	Feet		
Elevation Bottom of Boring	<u>-13.3</u>	MLW	Subsurface Water Data	Page _____
Total Depth of Boring	<u>11.0</u>	Feet	Obs. Well _____	
Core Recovered	<u>97.2%</u>	No. Boxes	Drilled By <u>EASTERN GEOTECHNICAL ASSOC.</u>	
Core Recovered	<u>2</u>	ft : <u>11"</u>	Mfg. Des. Drill <u>ACKER</u>	
Soil Samples	<u>1 7/8"</u>	In. Diam. <u>1 3/8</u> In.	Inspected By: <u>J CROWTHER</u>	
Soil Samples		In. Diam. <u>4</u> No.	Classification By: <u>J CROWTHER</u>	
			Classification By:	

DEPTH 1"-1.0'	CORE/SAMPLE			BLOWS PER FT/2 CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
1	1		0.0 to		2.0 ft. PUSH IN	
3					SAMPLED WITH SFT. 1 7/8" I.D. SPOON FROM 0.0 TO 5.0 FT WITH 300lb HAMMER.	SILT - nonplastic, less than 10% fine sand and shells, dark brown, (ML).
10				1		
20				7		
30						
6				2		
40	1A			8	DROVE 3" ID CASING FROM 0.0 TO 5.0 FT. AND WASHED OUT	3.5 FT SANDY SILT slightly to non-plastic, 20-30% very fine sand, grey brown (ML)
60				9		
50				7	1.0 ft REC.	4.5 FT SANDY SILT slightly plastic fines, 20-30% very fine sand, grey brown (ML)
GENERAL REMARKS: WATER 8.0 FT DEEP AT 1045 hrs on 4-13-84						

Site: SMITH COVE
GLOUCESTER MA.

Boring No.

FD-84-3

P-6

Page 4
of 4

DEPTH (+ 1.0')	CORE/SAMPLE NO.	SIZE DEPTH RANGE	BLOWS PER FT. CORE REC'D	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
15	Z	5.0 to 13	12		
6.0		13			6.0
40	ZA	26		DROVE 3" I.D. CASING FROM 5.0 TO 80 FT. AND WASHED OUT	SILTY SAND coarse to fine mostly fine, 15-10% gravel, 10-15% s.p. fines, grey brown (SM)
7.0		22		NOTE: BANCING REFUSAL AT 8.0 FT.	Possible Glacial Till
52		21		2 ft. REC.	
8.0		66			80 FT.
9.0				CORED FROM 8.0 FT. TO 11.0 FT WITH 200 HIGH CORE 1 ³ / ₈ " DIAMOND IMPREGNATED BIT	GRANITE BEDROCK
10.0				RECOVERY = 97.2%	
11.0				RQD = 20.8	
				DRILL TIME = 24 MINUTS	
					11.0 FT
				END OF BORING AT 11.0 FT.	11.0

APPENDIX E
FIELD LOGS OF PROBES

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE, GLoucester MA PROJECT NO. W.O. # 0008
Page 1 of 4 Pages

Hole No. PP-84-1 Diam. (Casing) - Boring Started 4-10-84

Co-ordinates: N E Boring Completed 4-10-84

Drilled by EASTERN GEOTECHNICAL ASSOC. Report Submitted

Purpose of Exploration DREDGE SITE

Elevation Top of Hole	<u>- 7.9</u>	M.L.W	Casing Left In Place	<u> </u>	Foot
Total Overburden Drilled	<u>5.5</u>	M.S.L.			
Elevation Top of Rock	<u>No rock encountered</u>	M.S.L.			
Elevation Bottom of Hole	<u>-13.4</u>	M.S.L.			
Total Rock Drilled	<u>0.0</u>	Feet			
Total Depth of Hole	<u>5.5</u>	Feet			
Core Recovered	<u>-</u>	%			
Core Recovered	<u>-</u>	Ft.; Diam. In.			
Soil Samples	<u>-</u>	In. Diam. No.			
Soil Samples	<u>-</u>	In. Diam. No.	Water Table Depth	<u>-</u>	

Depth From	To	Method of Drilling and Type of Bit Used	INDEX
0	<u>5.5</u>	DRILLED "AW" ROD PROBE WITH <u>300 lb. HAMMER</u>	Ground Water <u>TIDAL</u> Page <u>2</u>
			Boring Location Sketch Page <u>2</u>
			Overburden Record Page <u>3</u>
			Rock Drilling Page <u>4/A</u>
			Page <u> </u>
			Page <u> </u>
			Page <u> </u>

Prepared by John Crouther Field Data Lab Data

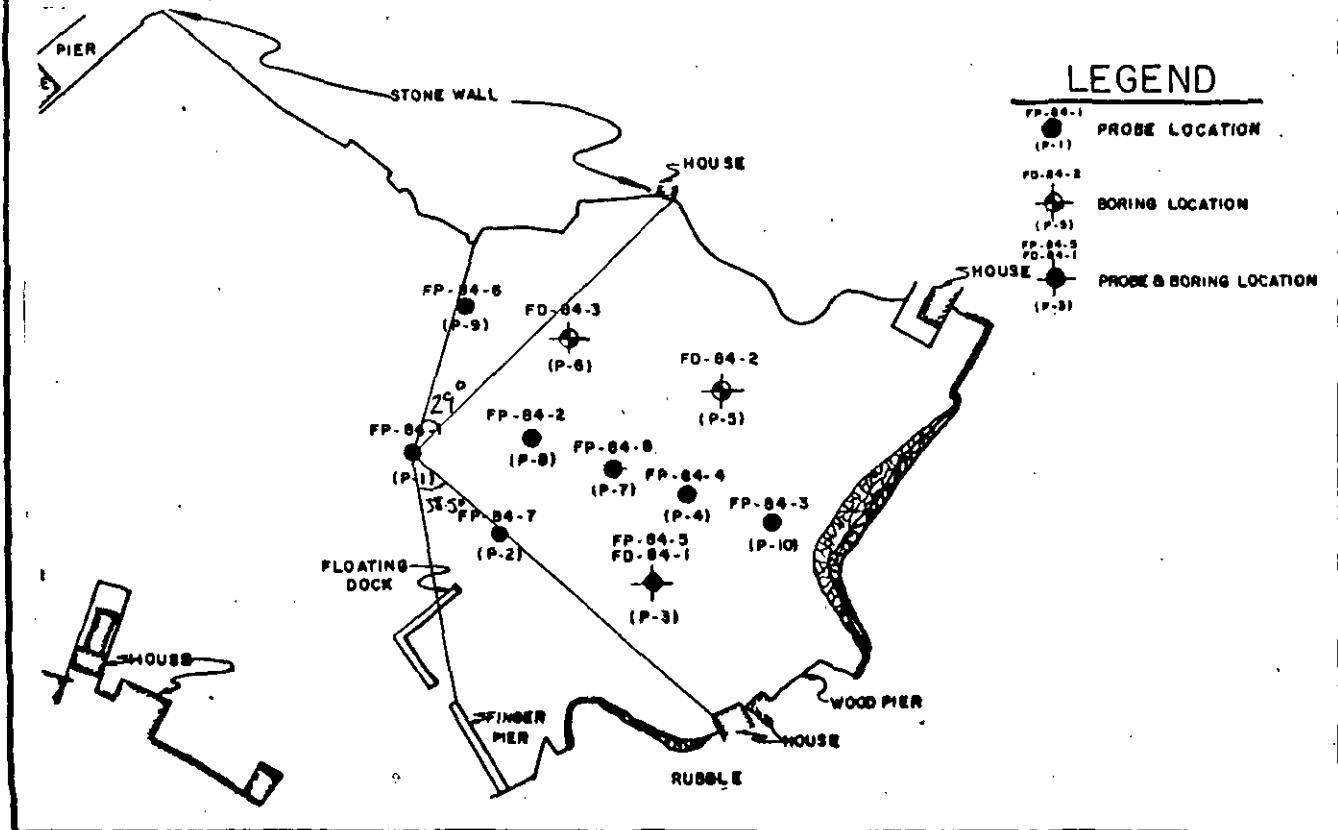
Submitted by _____

Site: SMITH COVE, GLOUCESTER, MA
Probe No. FP-84-1 (P-1)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. EP-54-

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITHCove GLOUCESTER MA Page 3 of 4 Pages

Probe FP-84-1 Desig. P-1 Diam. (Casing) —

Co-ordinates: N E

Elevation Top	- 7.9	MLW	M.S.L.	Hammer Wt. <u>300 lb</u>	Started <u>4-10-84</u>
Total Overburden Drilled	-	Feet	Feet	Hammer Drop <u>18"</u>	Completed <u>4-10-84</u>
Elevation Top of Rock	<u>NONE ENCOUNTERED</u>		M.S.L.	Casing Left <u>—</u>	
Total Rock Drilled	<u>N/A</u>	Feet	Feet	Subsurface Water Data <u>—</u>	Page <u> </u>
Elevation Bottom	- 13.4	MLW	M.S.L.	Obs. Well <u>—</u>	
Total Depth	5.5	Feet		Drilled By <u>EASTERN GEOTECHNICAL ASSOC.</u>	
Core Recovered	<u>N/A</u> %	No. Boxes		Mfg. Des. Drill <u>ACME</u>	
Core Recovered	<u>N/A</u> Ft.	Diam. In.		Inspected By: <u>J. CROWTHER</u>	
Soil Samples	<u>N/A</u>	In. Diam. No.		Classification By: <u>J. CROWTHER</u>	
Soil Samples	<u>N/A</u>	In. Diam. No.		Classification By: <u> </u>	

DEPTH 1' = 1.0'	CORE/SAMPLE			BLOWS PER FT CORE REC'D	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
0.0			0.0 to		1.5 FT. SINK IN	
1.0					DOVE "NW" ROD PROBE WITH 300 lb HAMMER FROM 0.0 TO 5.5 FT.	
2.0				1		
3.0				1		
4.0				1		
5.0				2		
				2		
				2		
				17		
GENERAL REMARKS:						
WATER 10.5 FT DEEP AT 1025 hrs ON 4-10-84						

Site:				Probe No.	Page <u>4</u> of <u>4</u>
DEPTH ' + 10'	CORE/SAMPLE NO.	CORE SIZE DEPTH RANGE	BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			26	<p>END OF PROBE AT 5.5 FT.</p> <p>NOTE: BOUNCING REFUSAL AT 5.5 FT.</p>	<p>SILT SAND (INTIP) cut off, mostly fine, 5-10% gravel, 10-15% silt fines, brown * (5m)</p> <p>5.5 FT</p> <p>* Poss. Glacial Till</p>

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE GLOUCESTER MA

PROJECT NO. W.O. #0008

Page 1 of 4 Pages

Hole No. FP-84-2 Diam. (Casing) -

Boring Started 4-10-84

Co-ordinates: N E

Boring Completed 4-10-84

Drilled by EASTERN GEOTECHNICAL ASSOC.

Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole -6.1 FT ^{MLW}
_{M.R.T.}

Casing Left in Place - Feet

Total Overburden Drilled 7.5 Feet

Elevation Top of Rock New Encountered M.S.L. ^{MLW}

Elevation Bottom of Hole -14.6 M.R.T.

Total Rock Drilled _____ Feet

Total Depth of Hole 7.5 Feet

Core Recovered - %

Core Recovered - Ft.; - Diam. - In.

Soil Samples - In. Diam. - No.

Soil Samples - In. Diam. - No.

Water Table Depth _____

Depth From To	Method of Drilling and Type of Bit Used
0.0 8.5	DROVE "AW" ROD PROBE WITH 300 LB. HAMMER

INDEX

Ground Water	TIDAL	Page 2
Boring Location Sketch		Page 2
Overburden Record		Page 3
Rock Drilling		Page N/A
		Page _____
		Page _____
		Page _____

Prepared by John Crouther

Field Data

Lab Data

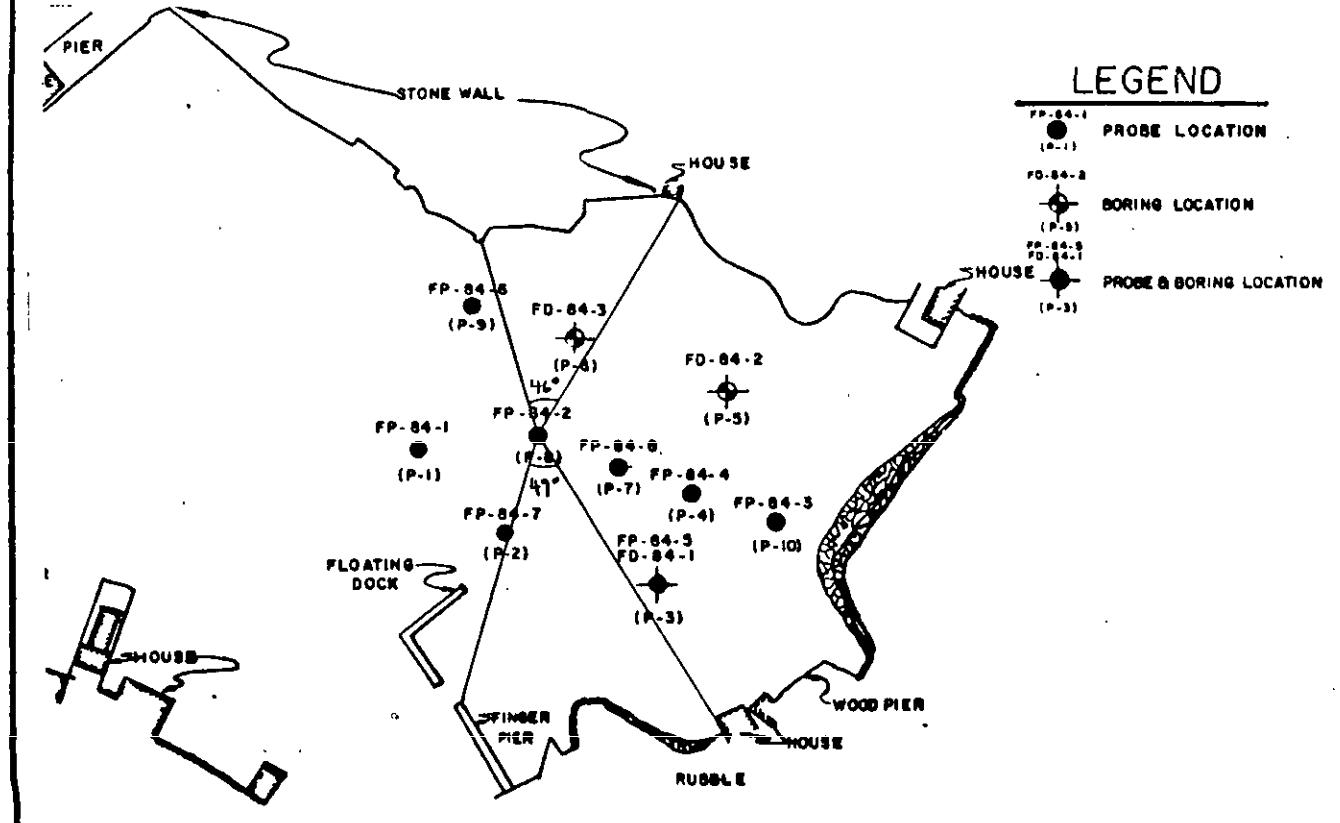
Submitted by _____

Site: SMITH COVE GLOUCESTER MA
Probe No. EP-84 - 2 (P-8)

TIDAL OBSERVATIONS

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. FP-84-2

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH GUE, GLOUCESTER MA Page 3 of y Pages

Probe FP-84-2 Desig. P-8 Diam. (Casing) -

Co-ordinates: N E

Elevation Top	<u>-6.1</u>	MLW	Hammer Wt. <u>300lb</u>	Started <u>4-10-84</u>
Total Overburden Drilled	<u>8.5</u>	M.S.T.	Hammer Drop <u>18"</u>	Completed <u>4-10-84</u>
Elevation Top of Rock <u>NOT ENCOUNTERED</u>	<u>N/A</u>	Feet	Casing Left <u>-</u>	
Total Rock Drilled	<u>N/A</u>	MLW	Subsurface Water Data <u>-</u>	Page <u>-</u>
Elevation Bottom	<u>-14.6</u>	M.S.T.	Obs. Well <u>-</u>	
Total Depth	<u>8.5</u>	Feet	Drilled By <u>EASTERN GEOTECHNICAL ASSOC.</u>	
Core Recovered	<u>N/A</u>	% No. Boxes <u>-</u>	Mfg. Des. Drill <u>ACKER</u>	
Core Recovered	<u>N/A</u>	Ft : Diam. <u>-</u> In.	Inspected By: <u>J. Coulter</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>-</u> No.	Classification By: <u>J. Coulter</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>-</u> No.	Classification By: <u>-</u>	

DEPTH 1' = 1.0'	CORE/SAMPLE			BLOWS PER FT. CORE REC'D	1/2 SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
1.0				1	1.0 FT. SINK IN	
2.0				2	DROVE "AW" ROD PROBE WITH 300 LB HAMMER FROM 0.0 TO 8.5 FT.	SILT (ON RODS 0 to 2 ft.) slightly plastic, 5-10% fine sand and shell, organics, dark brown (ML)
3.0				8		
4.0				9		
5.0				35		
				42		
				40		
				23		

GENERAL REMARKS:

WATER 6.9 FT. DEEP AT
1120 hrs. ON 4-10-84

CLAYEY SILT (ON RODS
3.0 to 7.0 ft.) V. stiff
slightly plastic, 5-10%
fine sand, grey brown
(ML)

DEPTH FT. 1.0'	CORE/SAMPLE NO.	SIZE DEPTH NAME	BLOWS PER FT. 1/2 CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
6.0			22		
6.5			38		
7.0			34		
7.5			67		
8.0			42		
8.5			23		
9.0			28		
				END OF PROBE AT 8.5 FT	8.5 FT

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

PROJECT NO. W.O. # 0008

Site SMITH COVE GLoucester MA Page 1 of 5 Pages

Hole No. FP-T4-3 Diam. (Casing) — Boring Started 4-11-84

Co-ordinates: N _____ E _____ Boring Completed 4-11-84

Drilled by EASTERN GEOTECNICAL Assoc. Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole	0.3	MLW	Casing Left in Place	—	Foot
Total Overburden Drilled	16.0	M.S.L.			
Elevation Top of Rock	None ENCOUNTERED	M.S.L.			
Elevation Bottom of Hole	-15.7	MLW			
Total Rock Drilled	—	M.S.L.			
Total Depth of Hole	16.0	Feet			
Core Recovered	—	In.			
Core Recovered Ft.	—	Diam. In.			
Soil Samples	—	In. Diam. No.			
Soil Samples	—	In. Diam. No.	Water Table Depth	—	

Depth From To	Method of Drilling and Type of Bit Used	INDEX
0.0 16.0	DRUG "AW" ROD PROBE WITH 300 lb. HAMMER	Ground Water T/LAG Page 2
		Boring Location Sketch Page 2
		Overburden Record Page 3
		Rock Drilling Page J/A
		Page

Prepared by John Crotcher Field Data Lab. Data

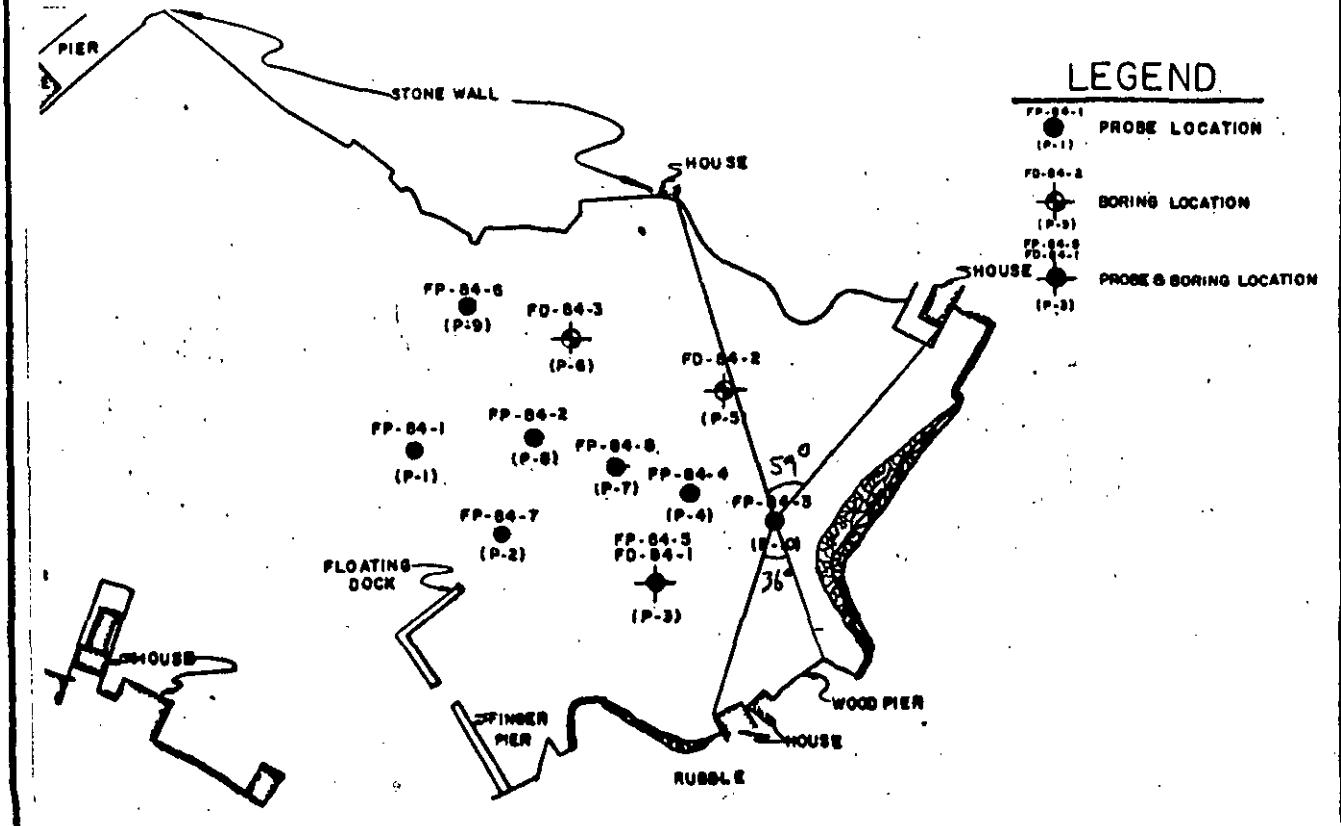
Submitted by _____

Site: SMITH COUR, GLACIER STK MA
Probe No. FP-T4-3 (P-10)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. FP-34-3

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COVE GLOUCESTER MA Page 3 of 5 Pages

Probe FP-84-3 Desig. P-10 Diam. (Casing) -

Co-ordinates: N E

Elevation Top	<u>0.3</u>	MLW	Hammer Wt. <u>300lb</u>	Started <u>4-11-84</u>
Total Overburden Drilled	<u>16.0</u>	M.S.L.	Hammer Drop <u>18"</u>	Completed <u>4-11-84</u>
Elevation Top of Rock <u>NONE ENCOUNTERED</u>			Casing Left <u>-</u>	
Total Rock Drilled	<u>N/A</u>	Foot	Subsurface Water Data <u>-</u>	Page <u>-</u>
Elevation Bottom	<u>-15.7</u>	MLW	Obs. Well <u>-</u>	
Total Depth	<u>16.0</u>	Foot	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered <u>N/A</u>	% <u> </u>	No. Boxes <u> </u>	Mfg. Date Drill <u>ACKER</u>	
Core Recovered <u>N/A</u>	ft. <u> </u>	Diam. <u> </u> in.	Inspected By: <u>J. Crowther</u>	
Soil Samples <u>N/A</u>	in. <u> </u>	Diam. <u> </u> in.	Classification By: <u>J. Crowther</u>	
Soil Samples <u>N/A</u>	in. <u> </u>	Diam. <u> </u> in.	Classification By: <u> </u>	

DEPTH 1' = 1.0'	CORE/SAMPLE			BLOWS PER FT. 1/2	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
1.0					2.5 FT. PUSH IN	
2.0						
3.0						
4.0						
5.0						

GENERAL REMARKS:

WATER 7.5 FEET DEEP
AT 0825hrs ON 4-11-84

Site: SMITH COVE GLOUCESTER MA

Probe No.

FP-84-3

P-10

Page 4
of 5

DEPTH ft. 1.0	SAMPLING AND CORING OPERATIONS				CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE	BLOWS PER FT. CORE REC'D	
6.0				6	
6.5				5	
7.0				6	
7.5				5	
8.0				7	
8.5				5	
9.0				5	
9.5				6	
10.0				6	
10.5				8	
11.0				6	
11.5				6	
12.0				9	
12.5				9	
13.0				6	
13.5				10	

Probe No. FP-84-3 P-10

Site: SMITH COVE GLOUCESTER MA

Probe No.

FP-84-3

P-10

Page 5
of 5

DEPTH F.O.I.	CORE/SAMPLE NO.	SIZE	DEPTH RANGE RECVY	BLOWS PER FT. 1/2	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				10		
				8		
				8		
				10		
				12		
14.0						
15.0						
16.0						
						CLAYET SILT (IN TIP) v. stiff, moderately plastic dark grey. (ML)
					END OF PROBE AT 16.0 FT.	16.0 FT
						16.0

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE Gloucester MA PROJECT NO. # 0008
Page 1 of 5 Pages

Hole No. F2-74-4 Diam. (Casing) — Boring Started 4-11-84

Co-ordinates: N E Boring Completed 4-11-84

Drilled by EASTERN GEOTECHNICAL ASSOC. Report Submitted

Purpose of Exploration DREDGE SITE

Elevation Top of Hole	<u>+ 0.1</u>	MLW	Casing Left in Place	<u>—</u>	Foot
Total Overburden Drilled	<u>16.0</u>	M.S.L.			
Elevation Top of Rock	<u>None Encountered</u>	M.G.L.			
Elevation Bottom of Hole	<u>-15.9</u>	MLW			
Total Rock Drilled	<u>0.0</u>	M.R.T.			
Total Depth of Hole	<u>16.0</u>	Feet			
Core Recovered	<u>—</u>	%			
Core Recovered	<u>—</u> Ft.	<u> </u> Diam. <u> </u> In.			
Soil Samples	<u>—</u>	<u> </u> In. Diam. <u> </u> No.			
Soil Samples	<u>—</u>	<u> </u> In. Diam. <u> </u> No.	Water Table Depth	<u> </u>	

Depth	Method of Drilling and Type of Bit Used
From	To
0.0	16.0
	<u>DRILL "AW" Rod PROBE WITH</u>
	<u>300 lb HAMMER</u>

INDEX	
Ground Water	<u>TIDAL</u>
Boring Location Sketch	<u> </u>
Overburden Record	<u> </u>
Rock Drilling	<u> </u>
	<u> </u>

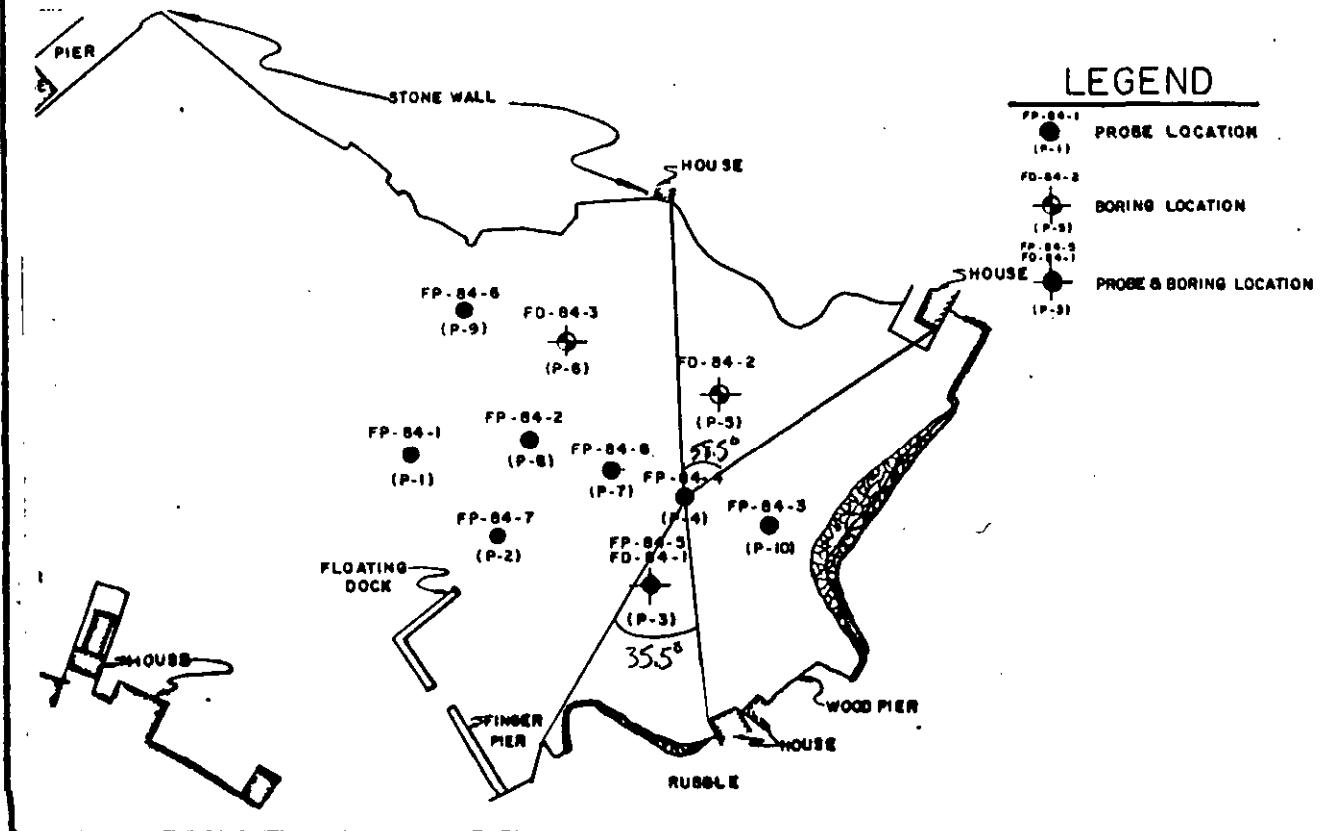
Prepared by John Crowley Field Data Lab. Data
Submitted by

Site: SMITHGATE GLOUCESTER MA
Probe No. FP-54-4 (P-4)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. EP-84-4

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COVE GLAUCSTER MA Page 3 of 5 Pages

Probe FP-84-4 Desig. P-4 Diam. (Casing) -

Co-ordinates: N E

Elevation Top	<u>+0.1</u>	MLW	Hammer Wt. <u>300 lb</u>	Started <u>4-11-84</u>
Total Overburden Drilled	<u>16.0</u>	M.S.L. Feet	Hammer Drop <u>18'</u>	Completed <u>4-11-84</u>
Elevation Top of Rock	<u>NONE ENCOUNTERED</u>	M.S.L.	Casing Left <u>-</u>	
Total Rock Drilled	<u>N/A</u>	Feet	Subsurface Water Data <u>-</u>	Page <u>-</u>
Elevation Bottom	<u>-15.9</u>	MLW	Obs. Well <u>-</u>	
Total Depth	<u>16.0</u>	Feet	Drilled By <u>EASTERN GEOTECHNICAL ASSOC.</u>	
Core Recovered	<u>N/A</u>	% No. Boxes <u>-</u>	Mfg. Date Drill <u>ACKER</u>	
Core Recovered	<u>N/A</u>	Ft. Diam. In. <u>-</u>	Inspected By: <u>J. Grouther</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>-</u> No. <u>-</u>	Classification By: <u>J. Grouther</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>-</u> No. <u>-</u>	Classification By: <u>-</u>	

DEPTH 16.0	CORE/SAMPLE				BLOWS PER FT 12	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE	CORE RECVY			
10						2.75 FT PUSH IN	
2.0						RODE "AW" ROD PROBE WITH 300 LB HAMMER FROM 0.0 TO 16.0 FT.	
3.0					1		
4.0					1		
5.0					1		
					1		
					1		

GENERAL REMARKS:

WATER 6.5 FT. DEEP AT
0910 hrs ON 4-11-84

SILT (ON RODS TO
7.0 FT. ±) slightly
plastic, 5-10% fine
sand and shells,
organics, dark brown
(ML)

Site:

SMITH COVE GLAUCSTER MA

Probe No.

FP-84-4

Page 9
of 5

DEPTH ft. 10	CORE/SAMPLE			BLOWS PER FT. 12	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
6.0				1		
7.0				2		
8.0				2		
9.0				3		
10.0				4		
11.0				4		
12.0				4		
13.0				5		
14.0				5		
15.0				5		
16.0				6		
17.0				5		
18.0				6		
19.0				5		
20.0				7		

CLAYEY SILT (ON RODS
7.0 to 11.0 FT ±) slightly
plastic, dark gray
(ML)

Site:

SMITH COVE GLOUCESTER MA

Probe No.

FP-84-4

P-4

Page 5
of 5

DEPTH ft.	NO.	CORE/SAMPLE SIZE DEPTH RANGE	BLOWS PER FT. 1/2 CORE RECVY	SAMPLING AND CORING OPERATIONS		CLASSIFICATION OF MATERIALS
				1/2	SAMPLING AND CORING OPERATIONS	
4.0			8			
15.0			8			
16.0			9			
			10			
			12			
					16.0	16.0
				END OF PROBE AT 16.0 FT.		

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 NEW ENGLAND DIVISION
 FOUNDATION AND MATERIALS BRANCH
 FIELD LOG OF TEST BORING

PROJECT NO. W.O. # 0008
 Site SMITH COVE GLOUCESTER MA Page 1 of 5 Pages

Hole No. FP-84 Diam. (Casing) _____ Boring Started 4-11-84

Co-ordinates: N _____ E _____ Boring Completed 4-11-84

Drilled by EASTERN GEOTECHNICAL ASSOC. Report Submitted

Purpose of Exploration DREDGE SITE

Elevation Top of Hole	0.2	MLW	Casing Left in Place	—	Foot
Total Overburden Drilled	16.0	Mr. Grk.			
Elevation Top of Rock	None Encountered	N.S.L.			
Elevation Bottom of Hole	-15.8	MLW			
Total Rock Drilled	0.0	Mr. G.T.C.			
Total Depth of Hole	16.0	Feet			
Core Recovered	—	%			
Core Recovered	— ft.	Diam. in.			
Soil Samples	— in.	Diam. No.			
Soil Samples	— in.	Diam. No.	Water Table Depth	—	

Depth From To	Method of Drilling and Type of Bit Used	INDEX		
		Ground Water	TIDAL	Page 2
0.0-16.0	DRIVEN "AW" ROD PROBE WITH 300 lb HAMMER	Boring Location Sketch		Page 2
		Overburden Record		Page 3
		Rock Drilling		Page N/A
				Page
				Page
				Page

Prepared by John Coughlin Field Data Lab. Data

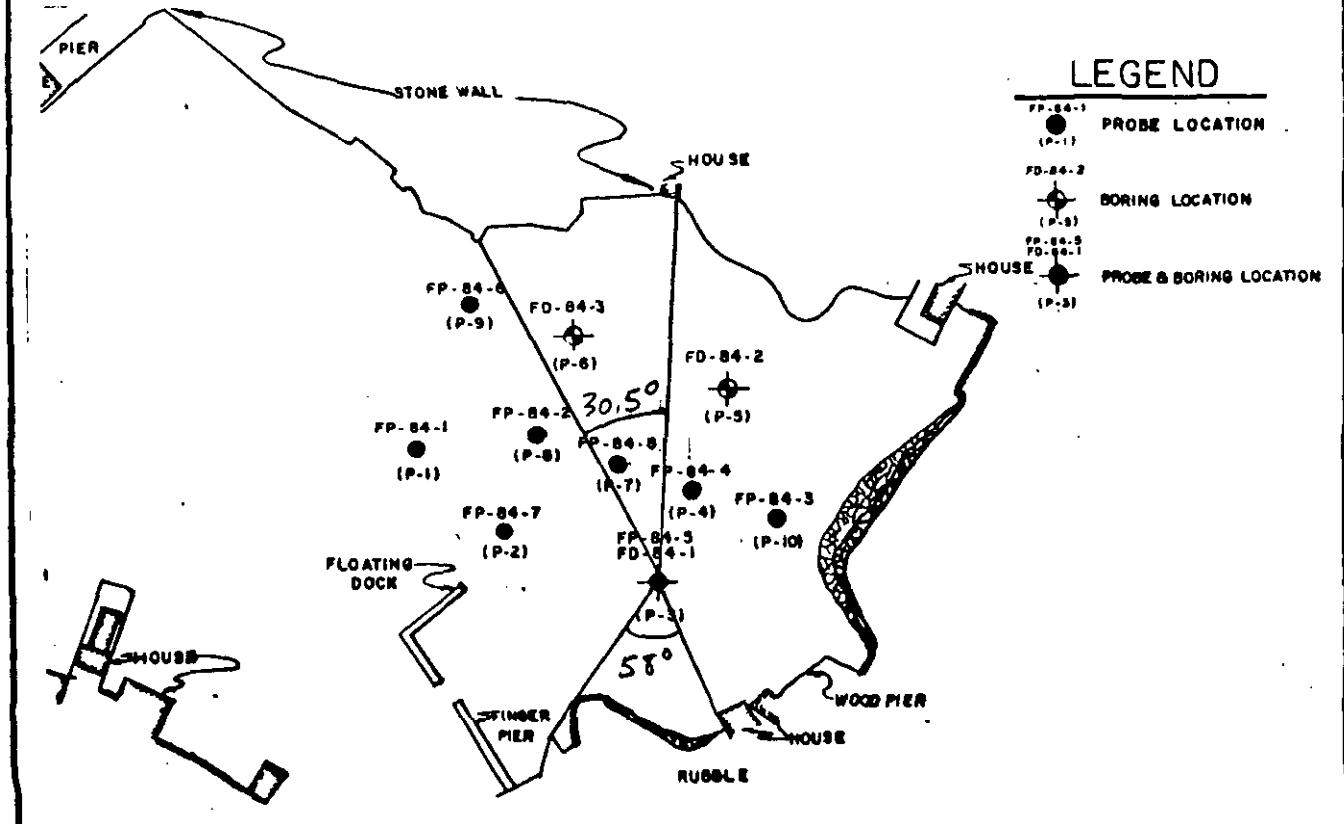
Submitted by _____

Site: SMITH COUG GLOUCESTER MA
Probe No. FP-84-5 (P-3)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. FP-84-5

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COVE GLOUCESTER MA Page 3 of 5 Pages

Probe FP-84-5 Desig. P-3 Diam. (Casing) —

Co-ordinates: N E

Elevation Top	<u>0.0</u>	MLW	Hammer Wt. <u>300 lb.</u>	Started <u>4-11-84</u>
Total Overburden Drilled	<u>16.0</u>	Feet	Hammer Drop <u>28"</u>	Completed <u>4-11-84</u>
Elevation Top of Rock	<u>NONE ENCOUNTERED</u>	M.S.L.	Casing Left <u>—</u>	
Total Rock Drilled	<u>N/A</u>	Feet	Subsurface Water Data <u>—</u>	Page <u>—</u>
Elevation Bottom	<u>-15.8</u>	MLW	Obs. Well <u>—</u>	
Total Depth	<u>16.0</u>	Feet	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered	<u>N/A</u>	% No. Boxes	Mfg. Dev. Drill <u>ACKER</u>	
Core Recovered	<u>N/A</u>	ft : Diam. in.	Inspected By: <u>J. CROUTL</u>	
Salt Samples	<u>N/A</u>	in. Diam. No.	Classification By: <u>J. CROUTL</u>	
Salt Samples	<u>N/A</u>	in. Diam. No.	Classification By: <u>—</u>	

DEPTH 1'=1.0	CORE/SAMPLE			BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
1.0					Z.0 FT. PUSH IN	
2.0					DROVE "AW" ROD PROBE WITH 300lb HAMMER FROM 0.0 TO 16.0 FT.	
3.0				2		
4.0				4		
5.0				5		
6.0				6		
7.0				10		
8.0						
9.0						
10.0						
11.0						
12.0						

GENERAL REMARKS: WATER 4.5 FT. DEEP AT
1005 hrs ON 4-11-84

Site: SMITH COVE
GLOUCESTER MA

Probe No.

FP-84-5

P-3

Page 4
of 5

DEPTH F=10'	CORE/SAMPLE NO.	SIZE DEPTH RANGE	BLOWS PER FT. CORE REC'D	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
6.0			15		
7.0			15		
8.0			15		
9.0			16		
10.0			16		
11.0			17		
12.0			15		
13.0			13		
14.0			13		
15.0			13		
16.0			13		
17.0			13		
18.0			17		
19.0			17		
20.0			17		
					CLAY (ON RODS 10.0 to 16.0 FT ±) V. stiff, moderately to slightly plastic grey (ML)

Probe No. FP-84-5 P-3

SITE: SMITH COUG
GLOUCESTER MA

Probe No.

FP-84-5

P-3

Page 5
of 5

DEPTH ft., 10'	CORE/SAMPLE NO.	SIZE DEPTH RANGE CORE REGVY	BLOWS PER FT. CORE REGVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
140			72		
150			42		
			32		
			45		<u>CLAYEY SANDY SILT (INTIP)</u> hard, slightly plastic grey-brown (ML)
160			64		
				END OF PROBE AT 16.0 FT.	16.0 FT

Probe No. FP-84-5

P-3

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 NEW ENGLAND DIVISION
 FOUNDATION AND MATERIALS BRANCH
 FIELD LOG OF TEST BORING

PROJECT NO. W.M. #00008

Page 1 of 4 Pages

Site SMITH COVE, GLACESTER MA

Hole No. EP04-6 Diam. (Casing) -

Boring Started 4-11-84

Co-ordinates: N _____ E _____

Boring Completed 4-11-84

Drilled by EASTERN GEOTECHNICAL ASSOC Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole -7.0 MLW M.S.L.

Casing Left in Place - Feet

Total Overburden Drilled 7.5 Feet

Elevation Top of Rock NOT ENCOUNTERED M.S.L.

Elevation Bottom of Hole -14.5 M.L.W. M.S.L.

Total Rock Drilled -0.0 Feet

Total Depth of Hole 7.5 Feet

Core Recovered - \$

Core Recovered - Ft.; Diam. In.

Soil Samples - In. Diam. No.

Soil Samples - In. Diam. No.

Water Table Depth _____

Depth From To	Method of Drilling and Type of Bit Used
0.0 7.5	DRUG "AW" 1200 PROBE WITH 300lb HAMMER

INDEX

- Ground Water TIDAL Page 2
 Boring Location Sketch Page 2
 Overburden Record Page 3
 Rock Drilling Page N/A
 Page _____
 Page _____
 Page _____

Prepared by John Clowther

Field Data

Lab Data

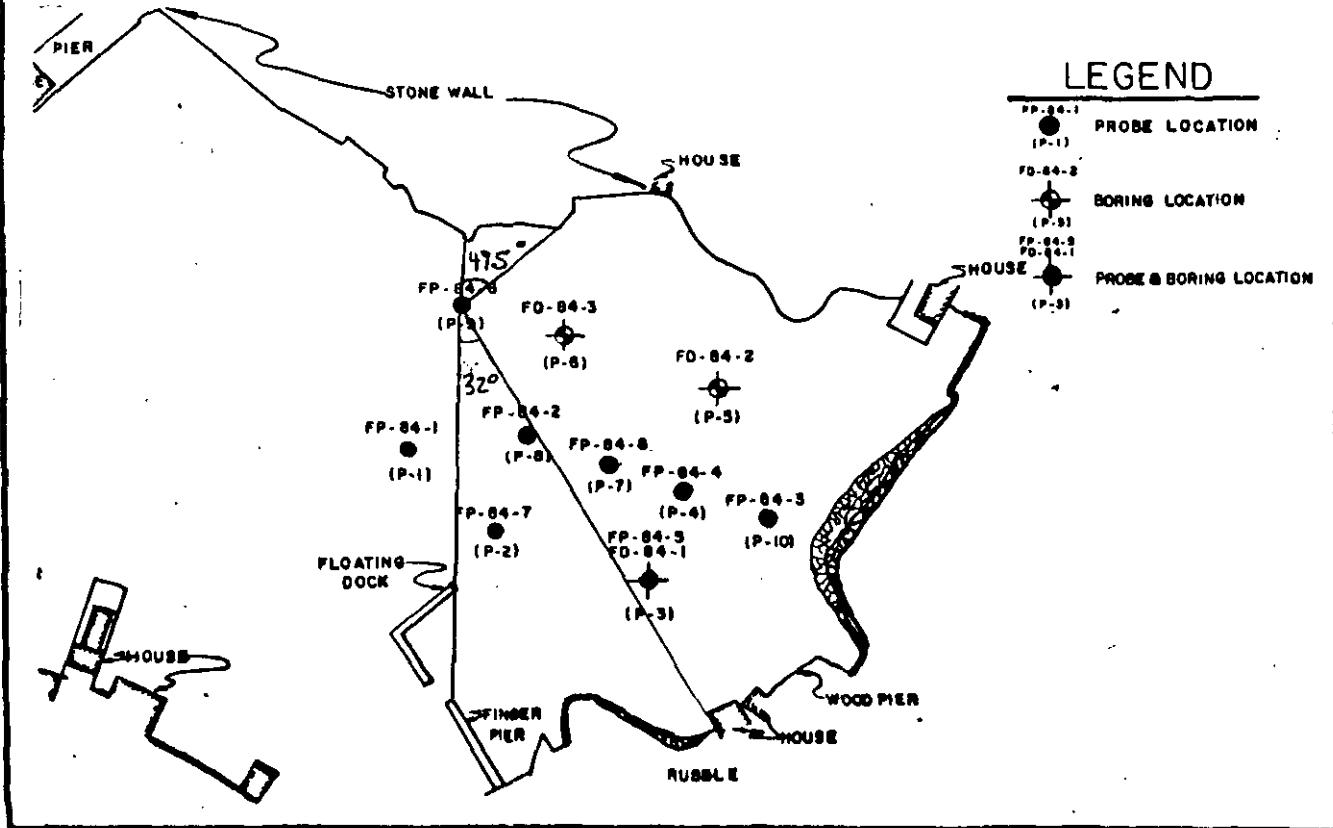
Submitted by _____

Site: SMITHCove GLOUCESTER MA
Probe No. FP-54-6 (P-9)

TIDAL OBSERVATIONS

Note: Depths are in' feet below original ground or mudline.

Probe Location Sketch



Probe No. FP-84-6

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITHCOTE GLOUCESTER MA Page 3 of 4 Pages

Probe FP-84-6 Desig. P-9 Diam. (Casing) _____

Co-ordinates: N _____ E _____

Elevation Top	-7.0	MLW	Hammer Wt. <u>300lb</u>	Started <u>4-11-84</u>
Total Overburden Drilled	<u>7.5</u>	Feet	Hammer Drop <u>15"</u>	Completed <u>4-11-84</u>
Elevation Top of Rock	<u>NONE</u>	Encountered M.S.L.	Casing Left _____	
Total Rock Drilled	<u>N/A</u>	Feet	Subsurface Water Data _____	Page _____
Elevation Bottom	-14.5	MLW	Obs. Well _____	
Total Depth	<u>7.5</u>	M.S.L.	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered	<u>N/A</u>	%	Mfg. Date Drill <u>ACTER</u>	
Core Recovered	<u>N/A</u>	ft :	Inspected By: <u>J. Counter</u>	
Soil Samples	<u>N/A</u>	In. Diam. _____ No.	Classification By: <u>J. Counter</u>	
Soil Samples	<u>N/A</u>	In. Diam. _____ No.	Classification By: _____	

DEPTH <i>1=1.0</i>	CORE/SAMPLE			BLOWS PER FT. <i>1/2</i>	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
1.0					1.0 FT. SINK IN	
2.0				1	DROVE "AW" ROD PROBE WITH 300lb HAMMER FROM 0.0 TO 7.5FT.	
3.0				2		
4.0				3		
5.0				3		
				5		
				7		
				8		

GENERAL REMARKS: WATER 9.0 FT. DEEP AT
1115 hrs ON 4-11-84

SILTY CLAY (ON RODS
3.5 to 6.5 FT.) STIFF,
slightly plastic, 10-20%
silt, gray (CL)

Site: SMITH COUG
GLOUCESTER MA

Probe No.

FP-84-6 P-9

Page 4
of 4

DEPTH 1'-10'	CORE/SAMPLE			SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE RECVY		
6.0				7	
7.0				7	
7.5				7	
				25	SILTY SAND coarse to fine mostly fine, 5-10% gravel, 10-15% n.p. fines, brown 7.5FT. (SM)
				36	
					END OF PROBE AT 7.5FT.
					NOTE: 60 Blows for less than 1" at 7.5 ft. BOUNCING REFUSAL

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NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE Gloucester MA PROJECT NO. W.O. #60088
 Page 1 of 6 Pages

Hole No. FP-84-7 Diam. (Casing) _____ Boring Started 4-12-84

Co-ordinates: N _____ E _____ Boring Completed 4-12-84

Drilled by EASTERN GEOTECHNICAL ASSOC. Report Submitted _____

Purpose of Exploration DREDGE SITE

Alt. #1 Alt. #2 MLW

Elevation Top of Hole 0.5 + -2.2 M.S.L. Casing Left In Place _____ Feet

Total Overburden Drilled 6.0 + 8.0 Feet

Elevation Top of Rock 6.0 8.0 M.S.L.
M.L.W.

Elevation Bottom of Hole -5.5 -10.2 M.S.L.

Total Rock Drilled 0.0 0.0 Feet

Total Depth of Hole 6.0 + 8.0 Feet

Core Recovered — %

Core Recovered — Ft.; — Diam. — In.

Soil Samples — In. Diam. — No.

Soil Samples — In. Diam. — No. Water Table Depth _____

Depth From	To	Method of Drilling and Type of Bit Used
0.0	6.0	DRUG "AW" ROD PROBE WITH 300 lb HAMMER
0.0	8.0	DRUG "AW" ROD PROBE WITH 300 lb HAMMER

INDEX	
Ground Water	TIDAL
Boring Location Sketch	Page 2
Overburden Record	Page 3
Rock Drilling	Page N/A
	Page _____
	Page _____
	Page _____

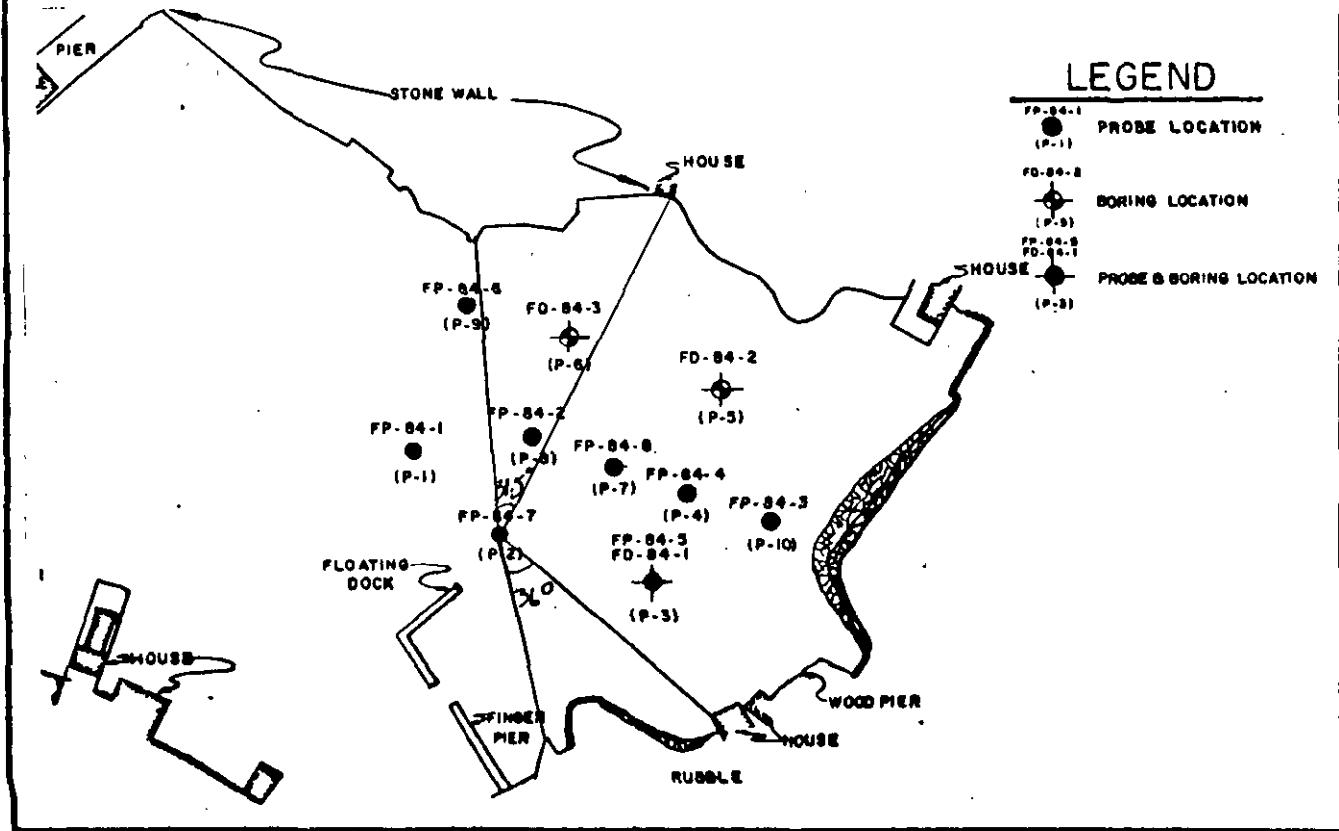
Prepared by John Crowley Field Data Lab Data
 Submitted by _____

Site: SMITH COVE GLOUCESTER MA
Probe No. EP-84-7 (P-2)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. Fp-89-7

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NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COUS GLOUCESTER MA Page 3 of 6 Pages

Probe FP84-7 Desig. P-2 Diam. (Casing) N/A

Co-ordinates: N _____ E _____

Elevation Top	<u>+0.5</u>	MLW	Hammer Wt. <u>300 lb</u>	Started <u>4-12-84</u>
Total Overburden Drilled	<u>6.0</u>	M.S.L.	Hammer Drop <u>18"</u>	Completed <u>4-12-84</u>
Elevation Top of Rock	<u>6.0</u>	M.S.L.	Casing Left <u>-</u>	
Total Rock Drilled	<u>N/A</u>	Feet	Subsurface Water Data <u>-</u>	Page <u>-</u>
Elevation Bottom	<u>-5.5</u>	M.L.W.	Obs. Well <u>-</u>	
Total Depth	<u>6.0</u>	M.S.L.	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered	<u>N/A</u> %	No. Boxes	Mfg. Des. Drill <u>ACKERL</u>	
Core Recovered	<u>N/A</u> Ft.	Diam. In.	Inspected By: <u>J. Crouther</u>	
Soil Samples	<u>N/A</u>	In. Diam.	Classification By: <u>J. Crouther</u>	
Soil Samples	<u>N/A</u>	In. Diam.	Classification By:	

DEPTH 1'=1.0	CORE/SAMPLE			BLOWS PER FT. 1/2	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE			
0.0					2.5 FT. PUSH IN	
1.0					ATTEMPT #1	
2.0					DRIVE "AW" ROD PROBE WITH 300lb HAMMER FROM 0.0 TO 6.0 FT	
3.0				1		
4.0				2		
5.0				2		
6.0				3		
7.0				3		

GENERAL REMARKS: WATER 5.0 FT DEEP AT
1030 hrs ON 4-12-84

CLAY (ON RODS 3.0 to
6.0 FT.) moderately to
slightly plastic, grey
(ML)

Site: SMITH COVE
GLOUCESTER MA

Probe No.

FP-84-7 (P-2)

Page 4
of 6

DEPTH ft.	CORE/SAMPLE NO.	BLOW SIZE DEPTH RANGE	BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
6.0			2 36	END OF PROBE AT 6.0 FT.	SILTY SAND (IN TIP) c.t.s.f. mostly fine, 5-10% gravel, 10-15% s.p. fines, brown (SM) 6.0 FT

NOTE: BOUNCING REFUSAL
AT 6.0 FT. MOVED
PROBE 10FT. TOWARDS
P-3 FOR ATTEMPT
#2

PROBABLE LEDGE
AT BOTH REFUSALS

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COVE GLOUCESTER MA Page 5 of 6 Pages

Probe FP-84-7 Desig. P-2 Diam. (Casing) N/A

(Attempt #2)

Co-ordinates: N E

Elevation Top	<u>-2.2</u>	M.L.W.	Hammer Wt. <u>300lb</u>	Started <u>4-12-84</u>
Total Overburden Drilled	<u>8.0</u>	M.S.L.	Hammer Drop <u>18"</u>	Completed <u>4-12-84</u>
Elevation Top of Rock	<u>8.0</u>	M.S.L.	Casing Left	
Total Rock Drilled	<u>N/A</u>	Feet	Subsurface Water Data	Page
Elevation Bottom	<u>-10.2</u>	M.L.W.	Obs. Well	
Total Depth	<u>8.0</u>	Feet	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered	<u>N/A</u> %	No. Boxes	Mfg. Des. Drill <u>ACKER</u>	
Core Recovered	<u>N/A</u> Ft.	Diam. In.	Inspected By: <u>J. Cloathier</u>	
Soil Samples	<u>N/A</u>	In. Diam.	Classification By: <u>J. Cloathier</u>	
Soil Samples	<u>N/A</u>	In. Diam.	Classification By:	

DEPTH <u>FT.</u>	CORE/SAMPLE <u>NO.</u>	CORE/SAMPLE <u>SIZE</u>	BLOWS <u>PER FT.</u>	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
		DEPTH <u>RANGE</u>	CORE <u>REC'D</u>		
0.0				Z.5 FT. PUSH IN	
1.0				ATTEMPT #2	
2.0				RODE "AW" ROD PROBE WITH 300lb HAMMER FROM 0.0 TO 8.0 FT.	
3.0			1		
4.0			2		
5.0			3		
			2		
			2		

GENERAL REMARKS: WATER 4.5 FT. DEEP AT
1145 hrs ON 4-12-84

CLAY (ON RODS 3.0 TO
6.5 FT.) moderately to
slightly plastic, gray,
(ML)

Site: SMITH COVE
GLOUCESTER MA

Probe No.

FP-84-7 P-2

Page 6
of 6

DEPTH F.O./O	CORE/SAMPLE			BLOWS PER FT. CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO	SIZE	DEPTH RANGE			
				3		
6.0				2		
				12		
7.0				28		
				32		SILT SAND (INTIP) coarse to fine, mostly fine, 5-10% gravel, 10-15% n.p. fines, brown (SM)
8.0				45		P.O
					END OF PROBE AT 8.0 FT	
					ATTEMPT #2	
					NOTE: BOUNCING REFUSAL AT 8.0 FT.	
					PROBABLE LEDGE	

Probe No. FP-84-7

P-2

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH
FIELD LOG OF TEST BORING

Site SMITH COVE GLACESTER MA PROJECT NO. W.O. # 0008
Page 1 of 5 Pages

Hole No. FP-84-5 Diam. (Casing) _____ Boring Started 4-12-84

Co-ordinates: N _____ E _____ Boring Completed 4-12-84

Drilled by EASTERN GEOTECHNICAL ASSOC. Report Submitted _____

Purpose of Exploration DREDGE SITE

Elevation Top of Hole	<u>- 2.8</u>	MLW	M.S.L.	Casing Left In Place	—	Foot
Total Overburden Drilled	<u>17.0</u>	Feet				
Elevation Top of Rock <u>None</u> Encountered	<u>ENCONTRERED</u>	M.S.L.				
Elevation Bottom of Hole	<u>- 19.8</u>	MLW	M.S.L.			
Total Rock Drilled	<u>0.0</u>	Feet				
Total Depth of Hole	<u>17.0</u>	Feet				
Core Recovered	<u>—</u>	%				
Core Recovered	<u>—</u> Ft.; <u>—</u> Diam. <u>—</u> in.					
Soil Samples	<u>—</u>	in.	Diam. <u>—</u> No.			
Soil Samples	<u>—</u>	in.	Diam. <u>—</u> No.	Water Table Depth	<u>—</u>	

Depth	Method of Drilling and Type of Bit Used	INDEX
From	To	
0.0	<u>DRILL "AW" ROD PROBE WITH</u> <u>300 lb HAMMER</u>	Ground Water <u>TIDAL</u> Page <u>2</u>
		Boring Location Sketch Page <u>2</u>
		Overburden Record Page <u>3</u>
		Rock Drilling Page <u>N/A</u>
		Page <u>—</u>
		Page <u>—</u>
		Page <u>—</u>

Prepared by John Crother Field Data Lab Data

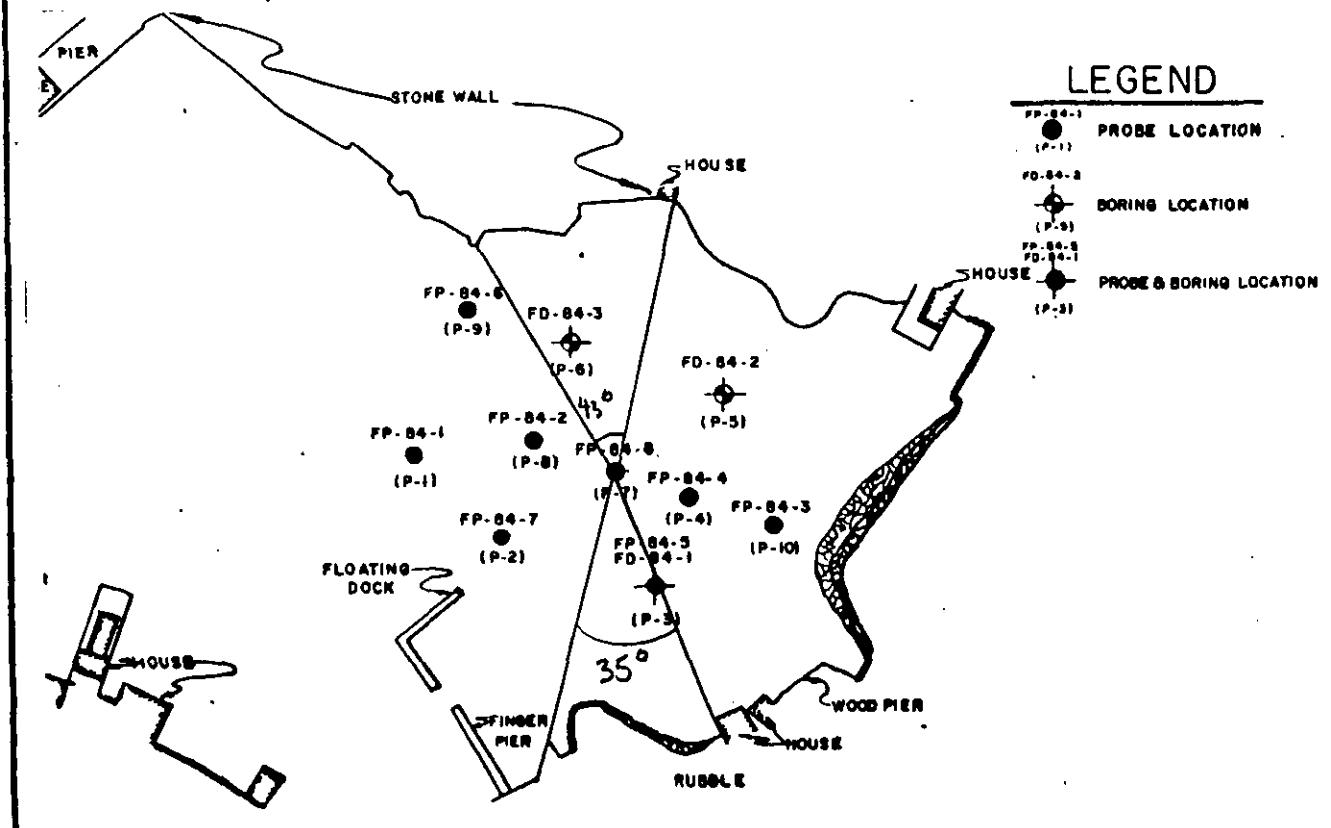
Submitted by _____

Site: SMITH COVE GLOUCESTER MA
Probe No. EP-54-8 (P-7)

TIDAL OBSERVATIONS MLW

Note: Depths are in feet below original ground or mudline.

Probe Location Sketch



Probe No. FP-84-8

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST PROBE

Site SMITH COVE GLOUCESTER MA Page 3 of 5 Pages

Probe FP-84-8 Desig. P-7 Diam. (Casing) N/A

Co-ordinates: N _____ E _____

Elevation Top	- 2.8	MLW	Hemmer Wt. <u>300 lb</u>	Started <u>4-17-84</u>
Total Overburden Drilled	<u>17.0</u>	M.S.L.	Hemmer Drop <u>18"</u>	Completed <u>4-12-84</u>
Elevation Top of Rock	<u>None</u>	ENCOUNTERED M.S.L.	Casing Left <u>—</u>	
Total Rock Drilled	<u>N/A</u>	Foot	Subsurface Water Data <u>—</u>	Page <u>—</u>
Elevation Bottom	- 19.8	M.L.W.	Obs. Well <u>—</u>	
Total Depth	<u>17.0</u>	Foot	Drilled By <u>EASTERN GEOTECHNICAL ASSOC</u>	
Core Recovered	<u>N/A</u>	%	Mfg. Des. Drill <u>ACHER</u>	
Core Recovered	<u>N/A</u>	ft :	Inspected By: <u>J. Crotile</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>—</u> No.	Classification By: <u>J. Crotile</u>	
Soil Samples	<u>N/A</u>	In. Diam. <u>—</u> No.	Classification By: <u>—</u>	

DEPTH $I^2=1.0$	CORE/SAMPLE				BLOWS PER FT. 1/2	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	NO.	SIZE	DEPTH RANGE	CORE RECVY			
10						1.75 FT. SINK IN	
20						4.0 FT SINK IN WITH WEIGHT OF HAMMER	
30						DRIVE "AW" ROD PROBE WITH 300lb HAMMER FROM 0.0 TO 17.0 FT.	
40							
50							

GENERAL REMARKS:

WATER 4.0 FT. DEEP AT
1220 hrs ON 4-12-84

Site: SMITH COUE
GLOUCESTER MA

Probe No.

FP-84-8 P-7

Page 4
of 5

DEPTH ft. / 0	CORE/SAMPLE NO.	CORE SIZE INCHES	DEPTH NUMBER	BLOWS PER FT. n	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				4		
6.0				5		
				5		
7.0				6		
				6		
8.0				6		
				7		
9.0				8		
				7		
10.0				8		
				9		
11.0				9		
				9		
12.0				10		
				10		
13.0				10		

Probe No. FP-84-8 (P-7)

Site: SMITH COVE GLOUCESTER MA				Probe No. FP-84-8	P-7	Page <u>5</u> of <u>5</u>
DEPTH ft.	CORE/SAMPLE NO.	SIZE DEPTH RANGE	BLOWS PER FT. CORE RECVY	1/2 SAMPLING AND CORING OPERATIONS		CLASSIFICATION OF MATERIALS
4.0			10			
			11			
			12			
5.0			12			
			13			
6.0			13			
			15			
7.0					17.0 FT	17.0
				END OF PROBE AT 17.0 FT		

Probe No. FP-84-8

P-7

APPENDIX F
TIDE CHART

HIGH & LOW WATER

AT

BOSTON

MASSACHUSETTS

Day of Month	Day of Week	MARCH						Day of Month	Day of Week	APRIL							
		HIGH				LOW				HIGH				LOW			
		a.m.	Ht.	p.m.	Ht.	a.m.	p.m.			a.m.	Ht.	p.m.	Ht.	a.m.	p.m.		
1	T	10 31	9.5	10 58	8.7	4 15	4 47	1	S	11 19	9.5	11 36	9.5	5 06	5 25		
2	F	11 09	9.6	11 34	8.9	4 54	5 21	2	M	11 56	9.4	....	....	5 44	6 01
3	S	11 47	9.6	....	....	5 33	5 58	3	T	12 10	9.6	12 34	9.3	6 23	6 38
4	S	12 09	9.1	12 23	9.6	6 10	6 33	4	W	12 47	9.7	1 13	9.1	7 02	7 15		
5	M	12 44	9.2	1 01	9.4	6 49	7 09	5	T	1 24	9.7	1 53	8.9	7 43	7 56		
6	T	1 19	9.3	1 38	9.2	7 30	7 46	6	F	2 06	9.6	2 38	8.6	8 29	8 41		
7	W	1 58	9.3	2 19	8.9	8 09	8 26	7	S	2 52	9.5	3 29	8.4	9 17	9 30		
8	T	2 36	9.2	3 05	8.5	8 54	9 10	8	S	3 44	9.4	4 25	8.2	10 12	10 27		
9	F	3 21	9.1	3 52	8.2	9 44	9 57	9	M	4 43	9.4	5 25	8.2	11 12	11 30		
10	S	4 11	9.1	4 49	8.0	10 36	10 51	10	T	5 45	9.5	6 29	8.5	....	12 15	
11	S	5 08	9.1	5 46	7.9	11 36	11 51	11	W	6 49	9.8	7 30	9.1	12 35	1 17		
12	M	6 08	9.3	6 50	8.1	....	12 40	12	T	7 52	10.1	8 29	9.7	1 39	2 15	
13	T	7 09	9.7	7 52	8.6	12 54	1 41	13	F	8 51	10.5	9 22	10.4	2 37	3 09		
14	W	8 10	10.2	8 50	9.2	1 57	2 39	14	S	9 46	10.8	10 13	11.0	3 33	3 59		
15	T	9 09	10.7	9 43	9.9	2 55	3 33	15	S	10 39	11.0	11 02	11.4	4 25	4 48		
16	F	10 05	11.2	10 36	10.6	3 51	4 25	16	M	11 31	10.9	11 50	11.6	5 17	5 36		
17	S	10 57	11.4	11 26	11.1	4 44	5 13	17	T	....	....	12 21	10.6	6 06	6 23
18	S	11 49	11.4	....	....	5 35	6 01	18	W	12 37	11.4	1 11	10.2	6 55	7 10
19	M	12 15	11.4	12 40	11.2	6 26	6 48	19	T	1 25	11.1	2 01	9.6	7 45	7 59		
20	T	1 03	11.4	1 31	10.7	7 17	7 36	20	F	2 15	10.5	2 53	9.0	8 36	8 51		
21	W	1 53	11.1	2 24	10.0	8 08	8 26	21	S	3 08	9.9	3 48	8.5	9 31	9 45		
22	T	2 44	10.6	3 18	9.3	9 02	9 17	22	S	4 03	9.3	4 47	8.1	10 29	10 43		
23	F	3 36	10.1	4 16	8.6	9 58	10 13	23	M	5 01	8.9	5 47	7.9	11 28	11 46		
24	S	4 35	9.5	5 17	8.1	10 59	11 15	24	T	6 02	8.6	6 46	8.0	....	12 25	
25	S	5 35	9.0	6 20	7.8	....	12 02	25	W	7 01	8.6	7 39	8.2	12 46	1 21	
26	M	6 37	8.8	7 23	7.8	12 17	1 05	26	T	7 55	8.6	8 26	8.5	1 42	2 10		
27	T	7 39	8.8	8 19	8.0	1 20	2 03	27	F	8 44	8.8	9 07	8.9	2 31	2 53		
28	W	8 34	8.9	9 08	8.3	2 16	2 51	28	S	9 27	9.0	9 46	9.3	3 16	3 35		
29	T	9 19	9.1	9 48	8.6	3 05	3 35	29	S	10 09	9.1	10 24	9.6	3 57	4 13		
30	F	10 02	9.3	10 25	9.0	3 48	4 13	30	M	10 48	9.2	11 01	9.8	4 37	4 52		
31	S	10 41	9.4	11 01	9.3	4 28	4 49										

Average Rise and Fall 9½ ft.

GLoucester Harbor-Tide Times Same as Boston

Average Rise in feet 8.7

No. 676
10 x 10 TO THE CENTIMETER
MADE IN U.S.A.

